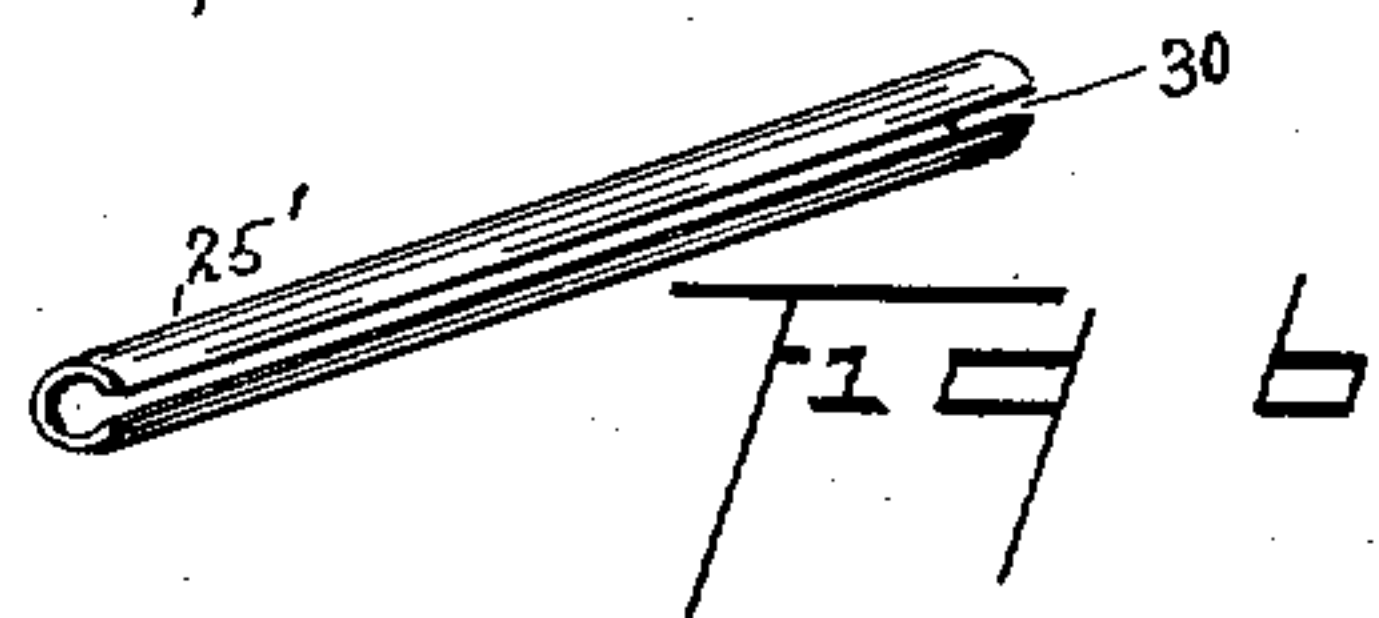
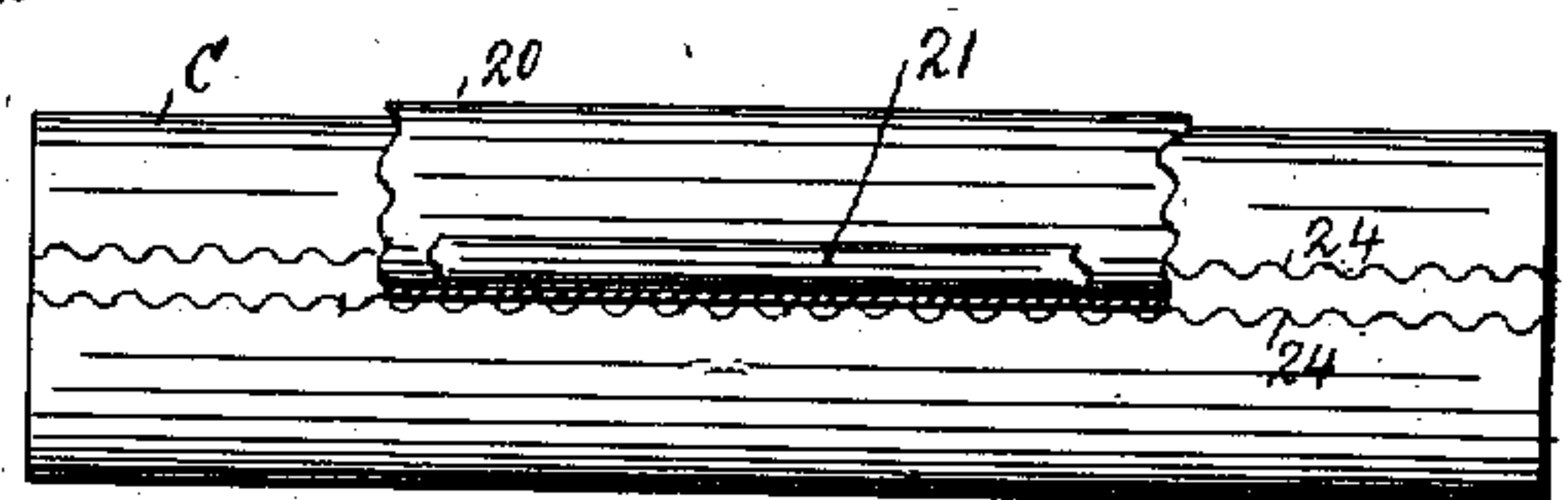
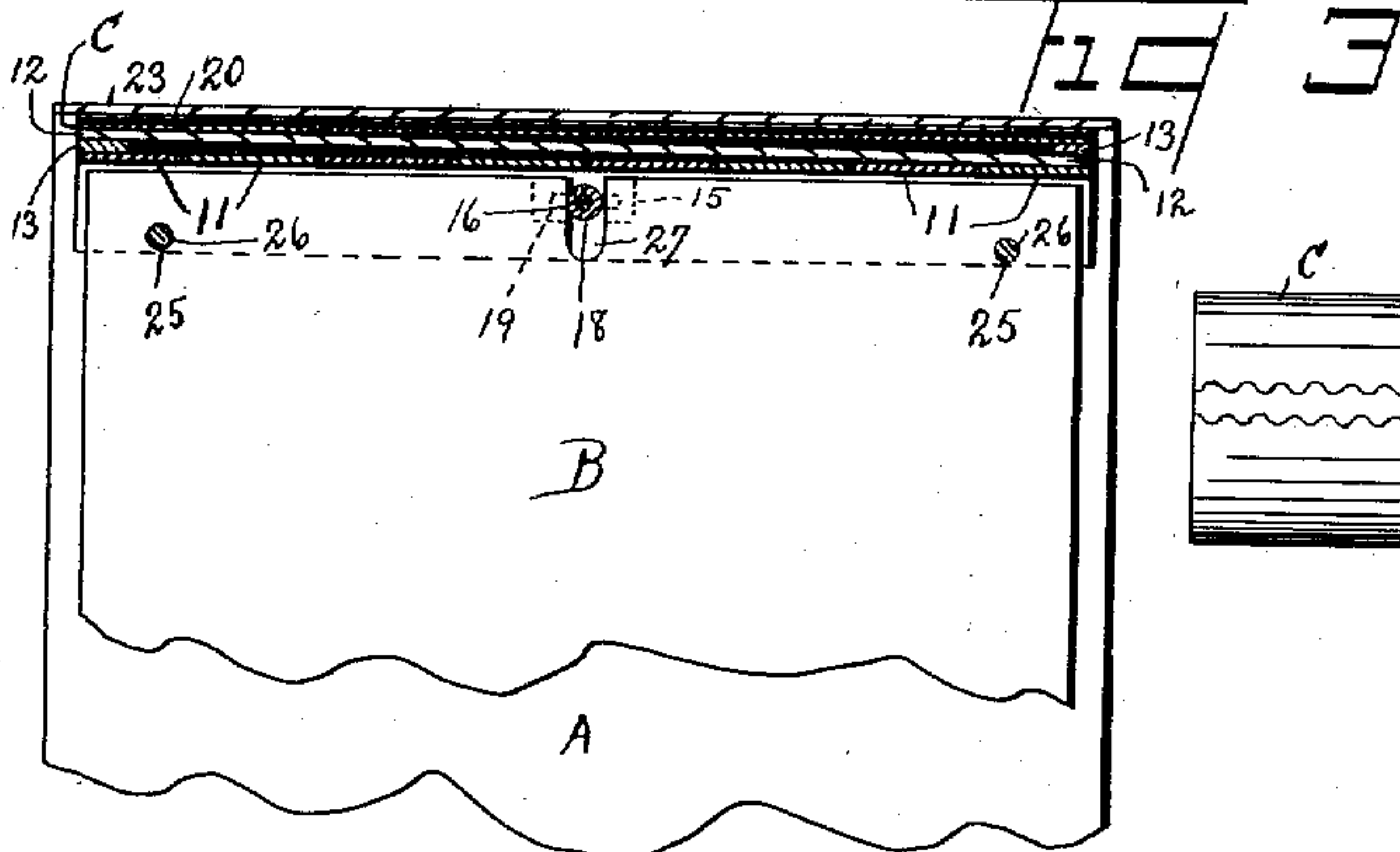
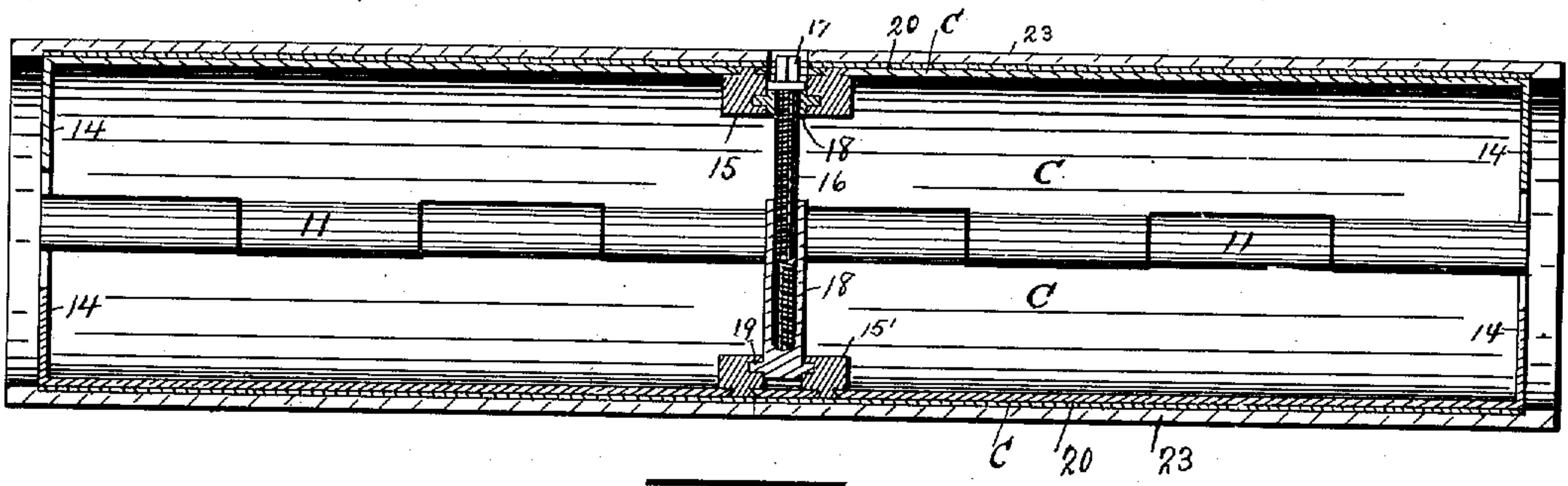
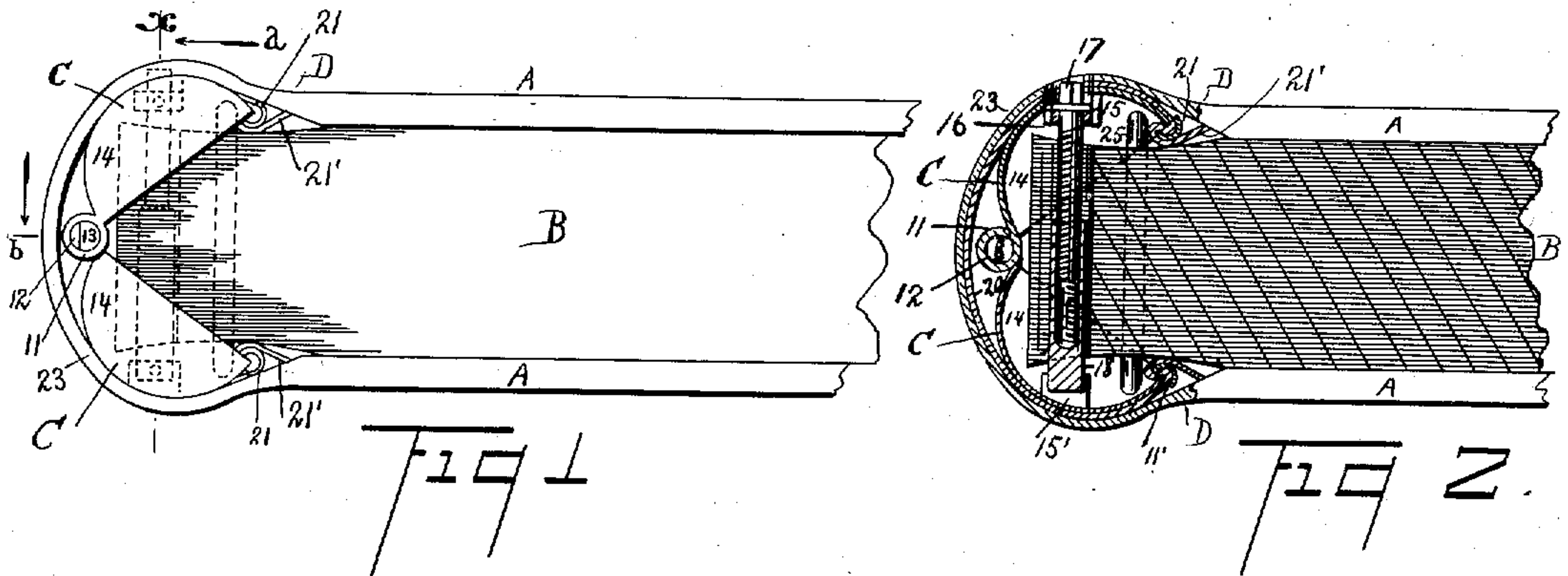


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LEAF BINDER.  
APPLICATION FILED JULY 27, 1907.

969,936.

Patented Sept. 13, 1910.



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# UNITED STATES PATENT OFFICE.

HUGH GELLROY BUCHAN, OF WOODBRIDGE TOWNSHIP, MIDDLESEX COUNTY, NEW JERSEY.

## LEAF-BINDER.

969,936.

Specification of Letters Patent. Patented Sept. 13, 1910.

Application filed July 27, 1907. Serial No. 385,864.

*To all whom it may concern:*

Be it known that I, HUGH GELLROY BUCHAN, a citizen of the United States, and a resident of the township of Woodbridge, county of Middlesex, and State of New Jersey, have invented certain new and useful Improvements in Leaf-Binders, of which the following is a specification.

While more particularly designed and adapted for use in binding backs and covers of the class known as loose-leaf binders, of the hinged form, in which the leaves, etc., to be bound may be removed and reinserted, the same is not by any means limited thereto; but is in certain of its parts applicable to bindings of permanent form.

The objects of my invention are to provide a back or binder for loose-leaves, signatures, pamphlets and like articles of any form, which will be of extreme simplicity and cheapness of construction, ease of manipulation, and great durability; wherein the sheets may be removed or inserted as desired, easily and quickly, and at the same time when in position be firmly held in place.

My invention comprises a back formed of two metallic portions usually but not necessarily hinged together at the center; a resilient spring forming the pivot of the hinged connection rigidly secured at one end to one of the segments, and in like manner rigidly secured at the other end to the other segment; a flexible backing extending around the metallic back and secured at its edges to the cover; a metallic securing clip swaged down upon the edge of the backing securing the flexible backing thereto; cover-boards secured on one side at the back edges to the flexible backing, and a cover backing also secured to said cover-boards and forming an outer covering to the flexible backing; metallic protective ends secured to the hinge segments adapted to cover and protect the rear ends of the leaves bound; a tension device for drawing and locking the two segments together and having a pivoted connection with each, and pins adapted to be inserted in and through perforations formed in the bundle of leaves to be bound in such manner that the pins are held in position when the binder is closed by abutment of the ends thereof against the rear side of the open edges of the hinged segments; although it is not to be understood that my invention is limited to a device including at once all

of the devices and parts mentioned, as my invention consists in the particular construction of certain devices and parts, and in the particular combination and arrangement of certain devices and parts, and in the particular construction, combination and arrangement of certain devices and parts, all as hereinafter more particularly set forth in the specification, and pointed out in the claims.

Said invention is fully shown in the following specification, of which the accompanying drawings form a part, wherein similar letters or numerals of reference designate like or equivalent parts, whenever found throughout the several views, and in which:—

Figure 1 is an end view of the rear or hinged portion of my improved loose-leaf binder; Fig. 2 is a view thereof in central vertical section looking in the same direction as in Fig. 1; Fig. 3 is a front view thereof looking in the direction of the arrow *a* in Fig. 1 taken on the section of line *x—x*; Fig. 4 is a top view of such binder taken in horizontal section on the line *b—b*; Fig. 5 is a detail view on an enlarged scale looking from the front of the hinged segments forming a portion of such binder; and Fig. 6 is a modification of the loose securing pin.

Referring to the drawing:—The reference letter A designates the binding boards, and B the body of loose leaves bound between the same, C designates two segmental back pieces of substantially the form shown, usually formed of suitable sheet metal or other appropriate material which are joined together at their abutting edges so as to form a hinge, by certain hollow coiled portions 11, as shown in Fig. 3. A spring 12 of suitable resilient metal, usually spring steel, which is secured rigidly at one end to one of the said segments C and in like manner at the other end to the other segment C in any desired manner usually by a plug 13 of such form as to hold the same against rotation passes through the central hollow coil portions 11 from end to end of the hinge structure so formed and secures the same together; such spring when the parts are put together and when the second plug is inserted having been twisted and put under sufficient tension, so that such spring will normally force the open edges D of such segments at all times forcibly toward one another. Metallic pro-



protective end pieces 14, usually of substantially semi-circular shape as shown in Figs. 1 and 2 have the forward ends secured in any desired manner to the outer free working ends of the segments C, and are secured to each of said segments at the inner end, to the end coiled hollow or hinged portions 11, the purpose of such protective end-pieces 14 being to cover and protect the body or bundle of leaves at the corners of the bound ends.

For convenience of description that one of the segments C shown at the top of Figs. 1, 2 and 3, will be herein designated as the top segment and that shown at the bottom as the bottom segment.

A hollow boss 15 is secured within the top segment through which passes so as to rotate freely therein the lock screw bolt 16 provided with a polygonal head 17 adapted to receive a suitable socket wrench by which the same may be rotated, and interposed between the boss and the screw bolt 16 is a vibrating bearing 18' pivoted in the boss in such manner that such bearing and screw bolt may be vibrated at a right angle to the axis of the segment hinge 11. The securing screw bolt 16 co-acts with a sleeve-nut 18 pivoted in a boss similar to the boss 15 numbered 15', as shown in Fig. 3 secured to the lower segment opposite to the boss 15 as shown at 19.

A flexible backing 20 usually formed of leather or similar material, which is tightly stretched upon the back-piece and has the forward edges thereof, firmly secured to the open clamping or working edges of the clamp formed by the two hinged sections of the back-piece, covers the back-piece formed by the two hinged segmental portions C and is secured in position by a U shaped securing strip of spring brass or other suitable metal 21, which is swaged down over such flexible backing and the end or edge of the segment C in such manner as to hold such flexible backing 20 firmly in position thereon. And in order firmly to secure the back-piece to the cover board A, the edges 21' of such flexible backing 20 extend beyond the securing strip 21 as clearly shown in Fig. 2, and are firmly glued or otherwise secured to the cover boards A. And superposed upon the piece 20 is the outer flexible back covering 23 which is by gluing or otherwise firmly secured to the cover boards A at the point D; and such flexible parts 20 and 23, may be formed of leather, canvas or any other suitable flexible material of sufficient strength; and if desired the edges of the segmental back-pieces C in order to be more firmly secured to the flexible backing 20 may be provided with serrations 24.

In the body of the loose leaves B which are to be secured in the binder, at the securing corners thereof are formed perforations 26, through which pass loose-securing-pins

25, which are of such length that the ends thereof when the segments C are locked together by the screwing home of the securing and locking-bolt 16, will extend behind the outer securing-ends of such segments C bearing the securing clips or strips 21, as clearly shown in Fig. 2, in such manner as to firmly lock the bundle or body of loose leaves B against removal from the backing and binding. Such leaf-bundle or body is provided at the center with an open end slot 27 to receive the locking-bolt 16 and sleeve 18 as shown in Figs. 2 and 4.

The operation of the device is as follows:—A plurality of loose leaves B forming the body or bundle to be bound is placed upon the lower cover of the binder, the top cover having been thrown back and the securing screw-bolt 16 having been loosened sufficiently to allow the free passage under the clips 22 of such body or bundle when the loose securing pins 25 are in place. Such securing pins are then slipped through the perforations 26, and the body or bundle of leaves slid into position, and when once in position the natural resiliency of the spring 12 will force the segments C into the binding position shown in Fig. 2. If then by the proper key the securing screw-bolt 16 is screwed down tightly into the nut-sleeve 18, such body or bundle of leaves will be locked in position and held therein, until such time as such screw is rotated in the reverse direction to release the binding pressure. Should it be necessary to remove any of the leaves:—as for example from the central portion of the bundle;—this can be done without disturbance of the other leaves by loosening the bolt 16 sufficiently to permit of the separation of the front edges of the segments C so as to allow of the drawing out from underneath the binding edges of such segments C, of the protruding ends of the loose securing pins 25; then by merely withdrawing one of such loose pins and twisting the sheets to be removed sidewise, and re-inserting the pins in the sheets to be retained, and thereafter manipulating the other pin and the sheets in the same manner, the bundle of sheets to be retained may be replaced in the body or bundle. By reversing this action, such sheets so removed from the body or bundle may be replaced, and with or without them the body or bundle returned to the position shown in Fig. 2, and firmly locked in position by the proper manipulation of the binding and locking-screw-bolt 16, as hereinbefore described. It will be seen that it is never necessary fully to remove the securing screw-bolt 16 from the nut-sleeve 18, as the same slips into the open end slot 27 of the body or bundle of leaves, and that the placing of the same in position before the screwing home of the bolt 16 so as to firmly bind and



secure such body or bundle of leaves in position, is facilitated by the fact that the torsional pivot spring 12 of the hinge segment, causes an initial pressure upon the leaf bundle the moment that the same is slid into position, so that the protruding end of the securing pins 25 lie behind the clips 22 on the securing edges of the hinge segments C.

Among other advantages possessed by my invention are that one or two sheets or a large number or as many as can be forced between the securing edges of the segmental hinged back-piece can be placed in position, and when few sheets are used, the loose-pins may be entirely omitted, or shorter ones used. In addition the roundness of the back makes the device convenient for the pocket, and desk, and where leaves are to be removed and be reinserted at frequent intervals, the securing-bolt may be left loose, and in this case and in cases where the securing-bolt is omitted, the spring hinge will by its own resiliency still keep the binding edges of the back-piece forced down upon the body or bundle of leaves in such manner as to bind and hold the same firmly in position in the cover. In like manner the torsional spring of the hinge may be entirely omitted, and the segments, which may be of any form, forced together solely by the securing bolt or other means performing the same function; or the spring hinge may be made of many and varied forms other than the one shown.

The securing-pin (numbered 25 in Figs. 2 and 4 and 25' in Fig. 6) may be of any desired form of construction; as shown in modification in such Fig. 6, being in the form of hollow cylinders of resilient metal, such as drawn brass, provided on one side with a longitudinal slit 30' and being made somewhat larger in diameter than the perforations in the body or bundle of paper to be bound, so that the resiliency of the spring metal will cause the same to fill the perforations tightly, the ends of such pins being rounded at the outer edges in order to facilitate entrance to the body of leaves.

What I claim is:—

1. In a binder, a back-piece the holding edges of which extend inward toward one another, and loose securing pins adapted to pass through the perforations in the body of leaves to be bound in such manner that the protruding ends will lie behind the holding edges of the back-piece.

2. In a binder, a segmental back-piece the holding edges of which extend inward toward one another, and loose securing pins adapted to pass through the perforations in the body of leaves to be bound in such manner that the protruding ends will lie behind the holding edges of the back-piece.

3. In a binder, a back-piece formed of two segmental shaped pieces hinged, the holding

edges of which back-piece extend inward toward each other, and loose securing pins passing through the perforations in the body of leaves to be bound in such manner that the protruding ends lie behind the holding edges of the back-piece.

4. In a binder, a back-piece formed of two segmental shaped pieces hinged together by a spring hinge, the holding edges of which back-piece extend inward toward each other, and loose securing pins passing through the perforations in the body of leaves to be bound in such manner that the protruding ends lie behind the holding edges of the back-piece.

5. In a binder, a back-piece formed of two segmental shaped pieces hinged together by a spring hinge, the holding edges of which back-piece extend inward toward each other, loose securing pins passing through the perforations in the body of leaves to be bound in such manner that the protruding ends lie behind the holding edges of the back-piece, and means for locking the parts forming the back-piece together.

6. In a binder, a resilient back-piece having co-acting binding and locking edges, means for forcing such edges toward one another to bind the loose leaves in position, and loose securing pins adapted to pass through perforations in the body of leaves to be bound which when in position have the ends thereof in abutment with the binding and locking edges of the back-piece.

7. In a binder, two segmental shaped back-pieces secured together by cylindrical alternating hinge-joints formed integral with each of such segments, and a torsion flat spring inclosed within and extending from end to end of the hinge-joints secured at one end to one segment and at the other to the other segment so as to keep the open binding-edges of the back so formed normally forced toward one another.

8. In a binder, two segmental shaped back-pieces secured together by cylindrical alternating hinge-joints formed integral with each of such segments, and a torsion spring inclosed within and extending from end to end of the hinge-joints and secured at one end to one segment and at the other to the other segment so as to keep the open binding-edges of the back so formed normally forced toward one another, cover-boards, a flexible backing superposed upon the back-piece, a U shaped metallic clip inclosing a fold of the flexible-backing and the edge of the segment secured upon the binding-edge of each of the segments of the back-piece, the securing edges of the flexible-backing extending outward from the securing-clip and secured to the cover-boards, and an outer flexible-back-cover secured at the forward edges to the cover-boards superposed upon the flexible-backing.



9. In a binder, two segmental shaped back-pieces secured together by cylindrical alternating hinge-joints formed integral with each of such segments, and a torsion spring inclosed within and extending from end to end of the hinge-joints, and secured at one end to one segment and at the other to the other segment so as to keep the open binding-edges of the back so formed normally forced toward one another, cover-boards, a flexible backing superposed upon the back-piece, a U shaped clip inclosing a fold of the flexible-backing and the edge of the segment secured upon the binding-edge of each of the segments of the back-piece, the securing edges of the flexible-backing extending outward from the securing-clip being secured to the cover-boards, an outer flexible-back-cover secured at the forward edges to the cover-boards superposed upon the flexible-backing, and protective end pieces for each of the segments at the end.

10. In a binder, a back-piece formed of two segmental shaped pieces the holding edges of which extend toward one another, and loose securing pins adapted to pass through perforations in the body of leaves to be bound in such manner that the protruding ends will lie behind the holding edges of the back-piece, and will be held in place by abutment of the ends thereof against the binding-edge of the segments of the back-piece.

11. In a binder, a back-piece formed of two segmental shaped pieces hinged together by a spring hinge, the holding edges of which back-piece extend inward toward each other, and loose securing-pins passing through perforations in the body of leaves to be bound in such manner that the protruding ends lie behind the holding edges of the back-piece, and will be held in place by abutment of the ends thereof against the binding edges of the segments of the back-pieces.

12. In a binder, a back-piece formed of two segmental shaped pieces hinged together by a spring hinge, the holding edges of which back-piece extend inward toward each other, loose securing-pins passing through perforations in the body of leaves to be bound in such manner that the protruding ends lie behind the holding edges of the back-piece, and means for locking the segments forming the back-piece together.

13. In a binder, two segmental shaped back-pieces secured together by cylindrical alternating hinge-joints formed integral with each of such segments, a torsion spring inclosed within and extending from end to end of the hinge-joints, secured at one end to one segment and at the other to the other segment so as to keep the open binding-edges of the back so formed normally forced toward one another, and loose securing-pins held in place by abutment of the ends there-

of against the binding-edges of the segments of the back-pieces.

14. In a binder, two segmental shaped back-pieces secured together by cylindrical alternating hinge-joints formed integral with each of such segments, a torsion spring inclosed within and extending from end to end of the hinge-joints, and secured at one end to one segment and at the other to the other segment so as to keep the open binding-edges of the back so formed normally forced toward one another, cover-boards, a flexible-backing superposed upon the back-piece, a U shaped clip inclosing a fold of the flexible-backing and the edge of the segment of the back-piece, the securing edges of the flexible-backing extending outward from the securing-clips and being secured at the forward edges to the cover-boards, and loose securing-pins held in place by abutment of the ends thereof against the binding-edges of the segments of the back-piece.

15. In a binder, two segmental shaped back-pieces secured together by cylindrical alternating hinge-joints formed integral with each of such segments, a torsion spring inclosed within and extending from end to end of the hinge-joints, and secured at one end to one segment and at the other to the other segment so as to keep the open binding-edges of the back so formed normally forced toward one another, cover-boards, a flexible-backing superposed upon the back-piece, a U shaped clip inclosing a fold of the flexible-backing and the edge of the segment secured upon the binding-edge of each of the segments of the back-piece, the securing edges of the flexible-backing extending outward from the securing-clips and being secured to the cover-boards, an outer flexible-back-cover secured at the forward edges to the cover-boards superposed upon the flexible-backing, protective end pieces for each of the segments at the end, and loose securing-pins held in place by the abutment of the ends thereof against the binding-edges of the segments of the back-piece.

16. In a loose-leaf binder, a back-piece formed of two segments hinged together, a screw lock bolt, and a co-acting nut-sleeve pivotedly secured one to one segment and one to the other, and loose securing-pins adapted to be held in position in the binder when passed through suitable perforations in the body of leaves to be bound by abutment against the inner side of the binding-edges of the segments.

17. In a binder, a metallic back-piece of segmental form, the binding-edges of which are adapted to bear upon the body of leaves to be bound, a flexible-backing superposed upon the back-piece, and metallic securing-clips swaged down upon the folds or loops of the flexible-backing made upon the binding-edges of the back-piece.

18. In a binder, a metallic back-piece of segmental form comprising two segments hinged together, the binding-edges of which are adapted to bear upon the body of leaves to be bound, a flexible-backing superposed upon the back-piece, and metallic securing-clips swaged down upon the folds or loops of the flexible-backing made upon the binding-edges of the back-piece.

10 19. In a binder, a back-piece, loose securing pins adapted to pass through perforations in a body or bundle of leaves to be bound, means carried by the back-piece, engaging with the ends of the loose securing pins which protruding ends will lie behind and abut against the inner side of the back-piece.

20 20. In a binder, a back-piece formed of two segmental shaped pieces hinged together, and a plurality of loose hollow longitudinally slitted securing pins formed of resilient metal of the same diameter throughout adapted to pass through perforations in the body or bundle of leaves to be bound

and secured at the ends by abutment against the abutting edges of the back-pieces. 25

21. In a binder, a back-piece formed of two segmental shaped pieces hinged together by a spring hinge, the outer or holding edges of which back-piece are serrated, a flexible backing, metallic securing clips inclosing the flexible backing and the serrated edges of each segmental piece of the back-piece, and loose securing pins unconnected mechanically with other parts adapted to pass through the body of leaves to be bound in such manner that the protruding ends of such securing pins lie behind the holding serrated edges of the back-piece and are held in place against forward movement only by such edges. 30 35 40

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HUGH GELLROY BUCHAN.

Witnesses:

JOHN J. CLANCY,  
WM. P. MARTIN.