

No. 835,340.

PATENTED NOV. 6, 1906.

W. M. WHEILDON.
LOOSE LEAF BINDER.

APPLICATION FILED FEB. 15, 1906.

2 SHEETS—SHEET 1.

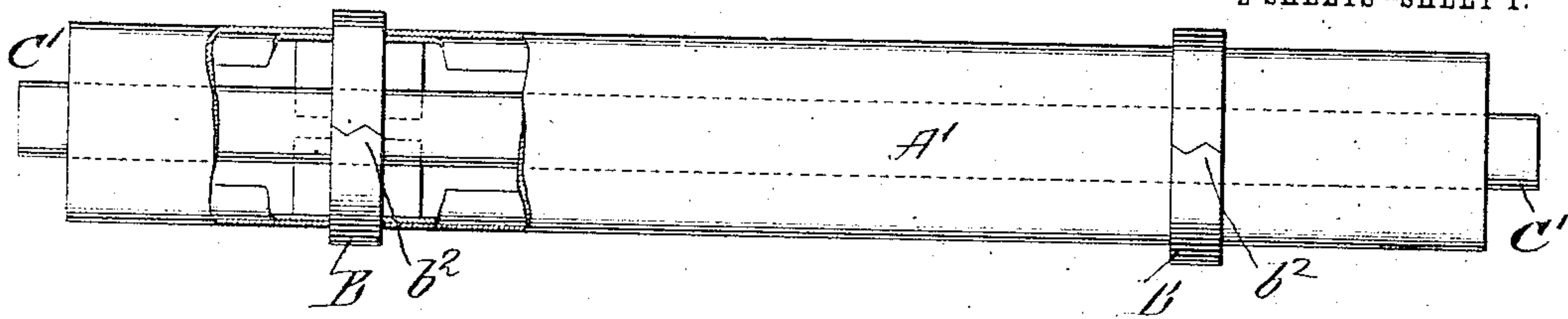


Fig. 1.

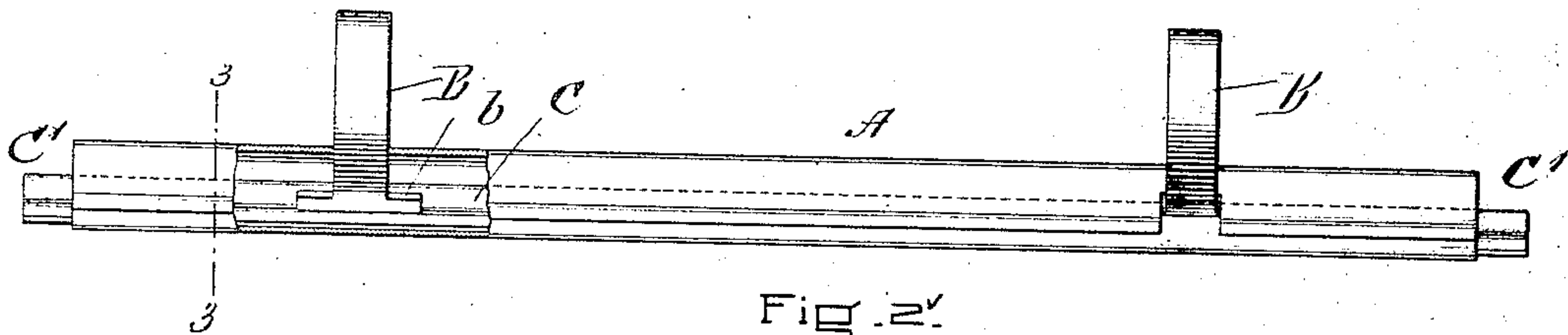


Fig. 2.

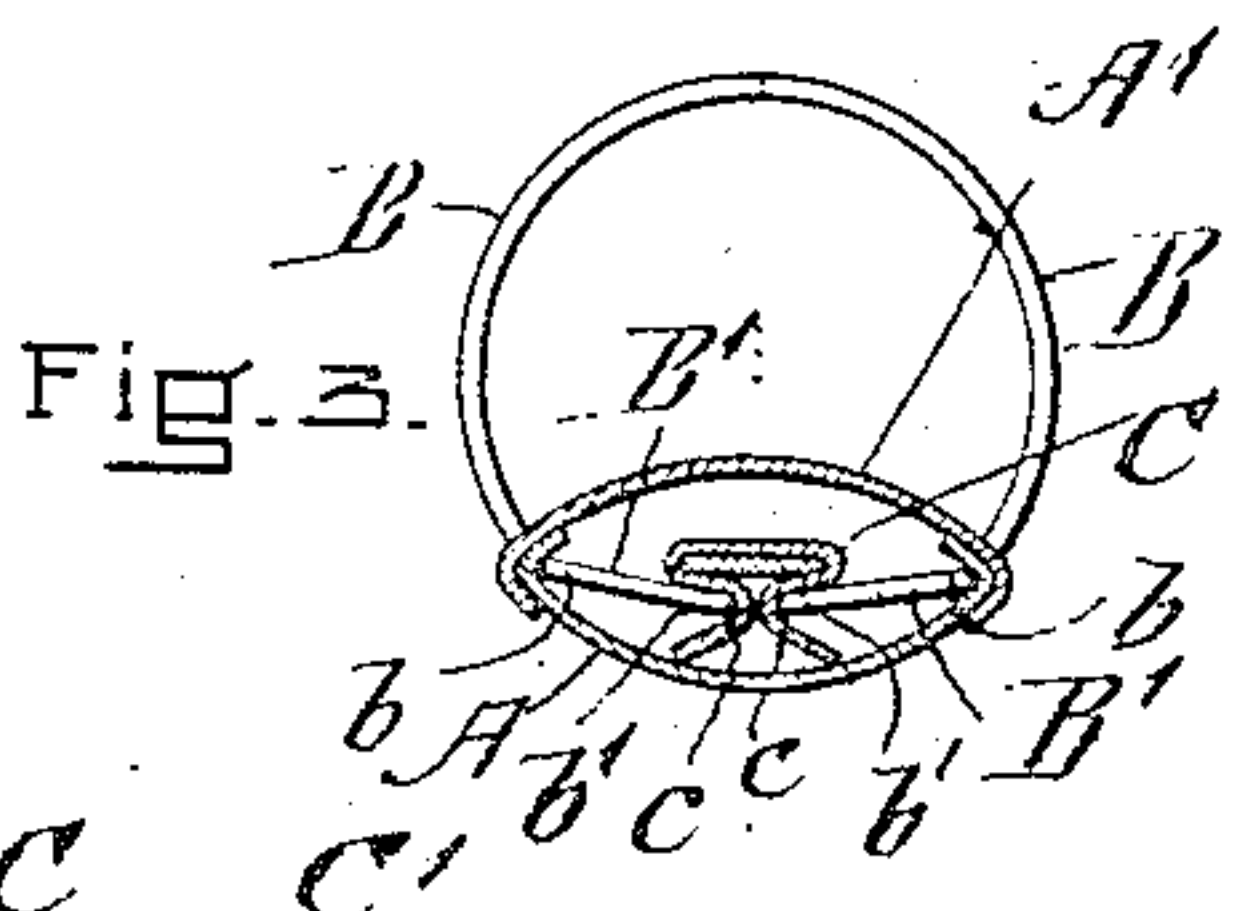


Fig. 3.

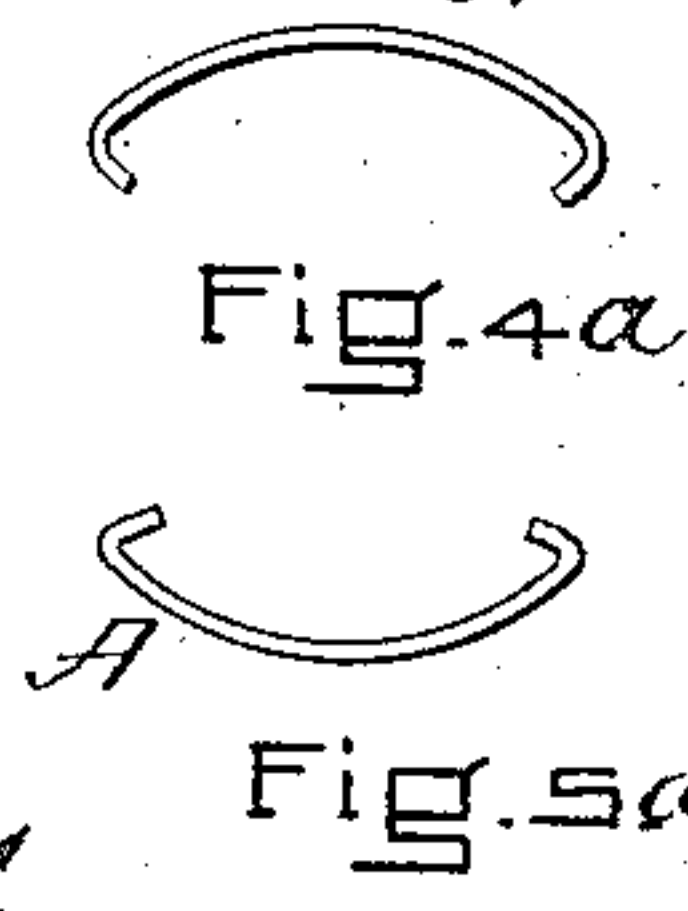


Fig. 4a.

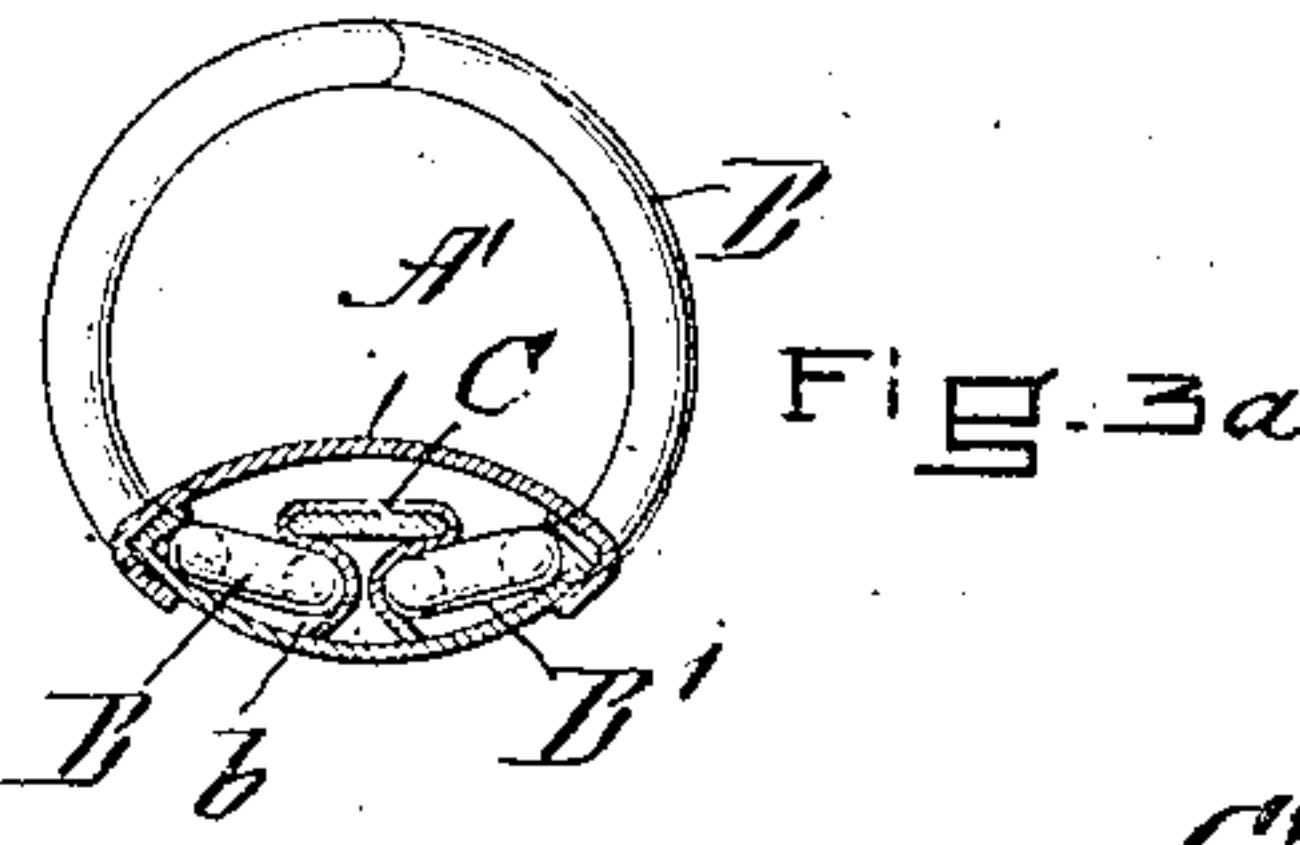


Fig. 3a.



Fig. 7.

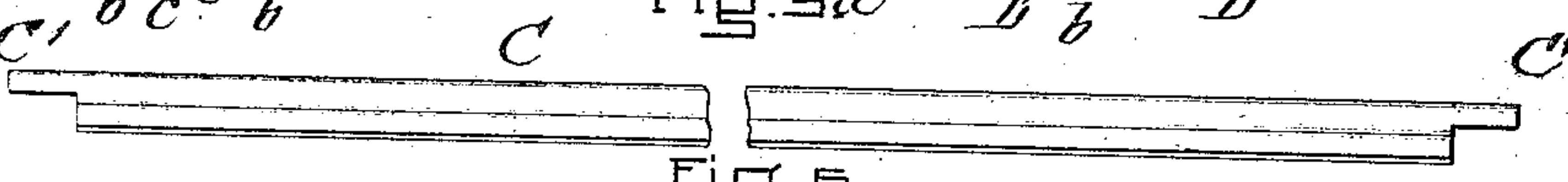


Fig. 6.

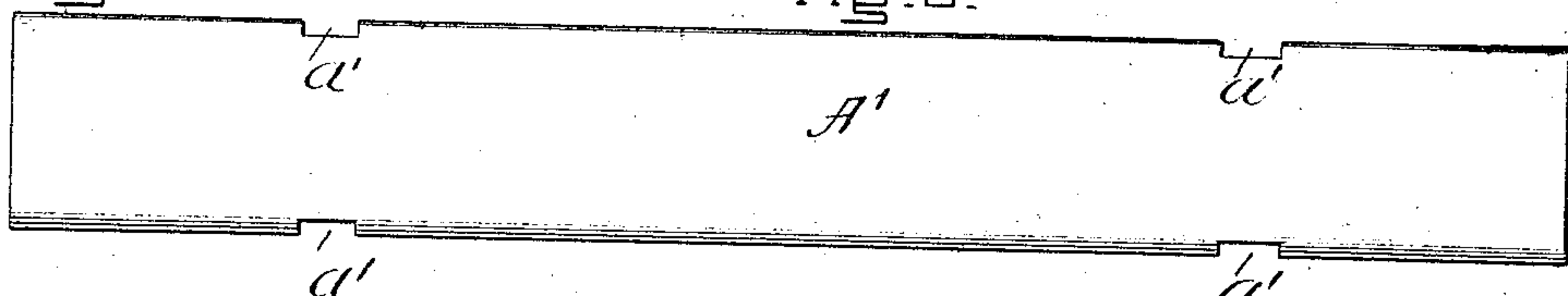


Fig. 4.

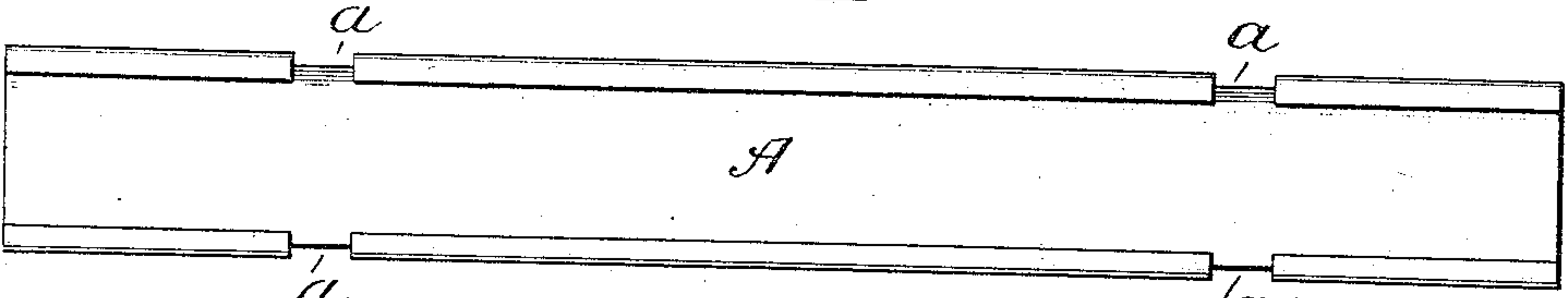


Fig. 5.

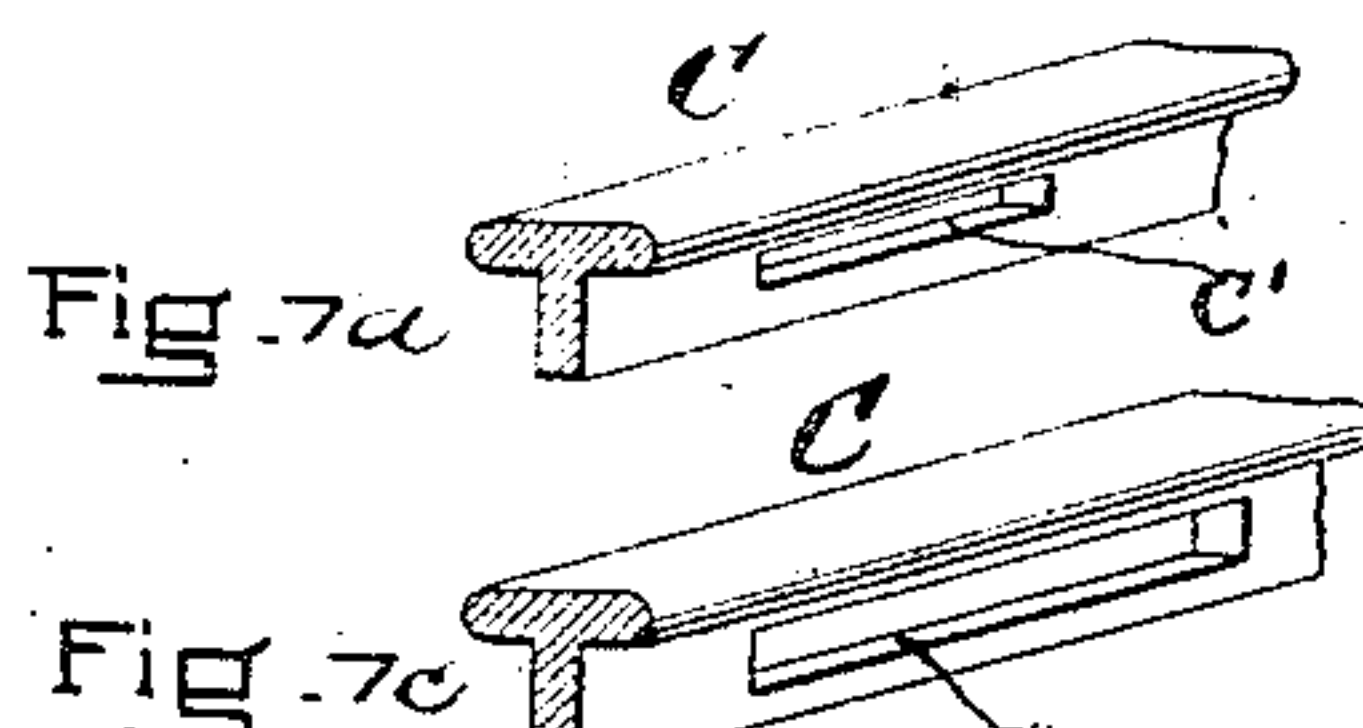


Fig. 7a.

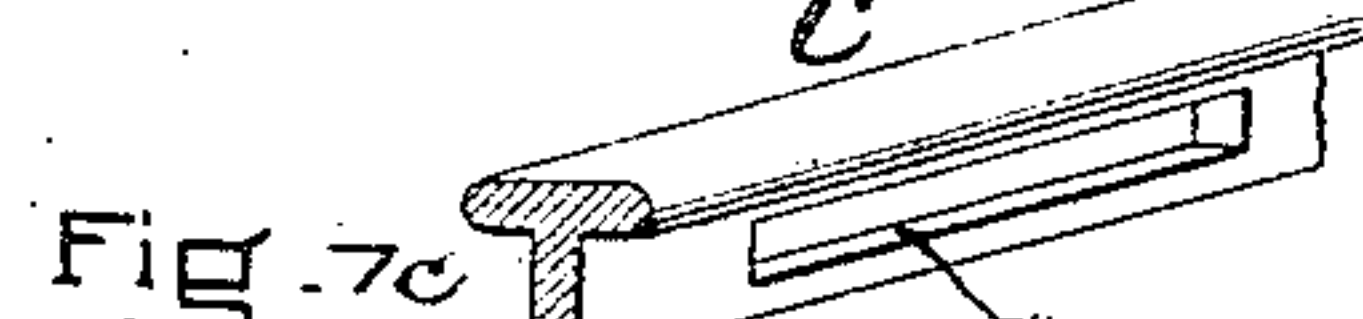


Fig. 7c.

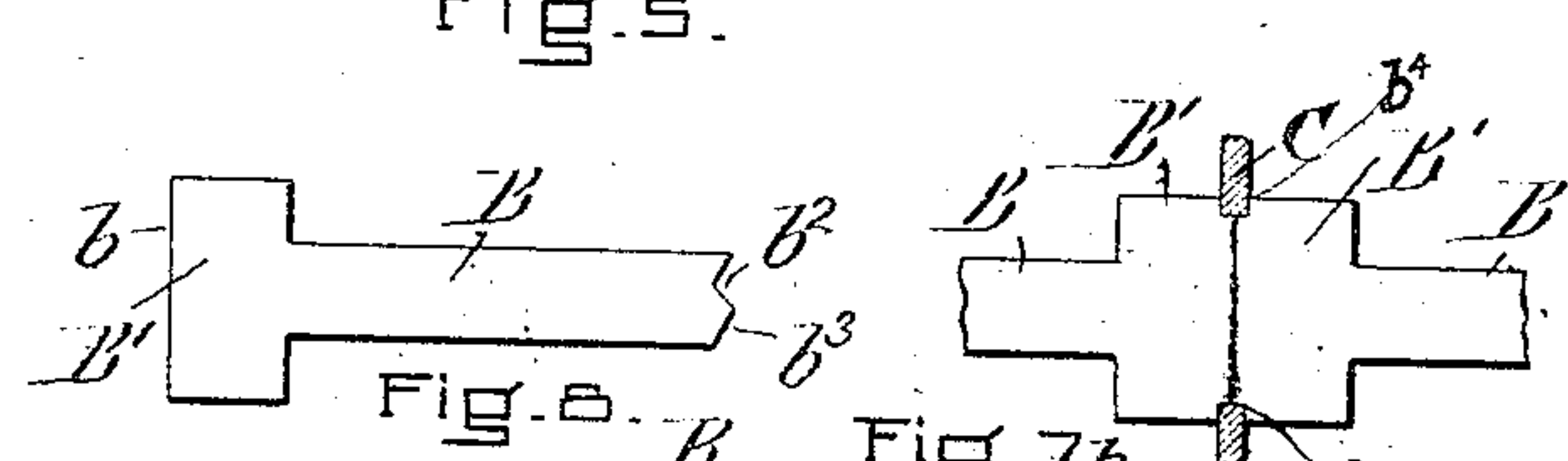


Fig. 8.

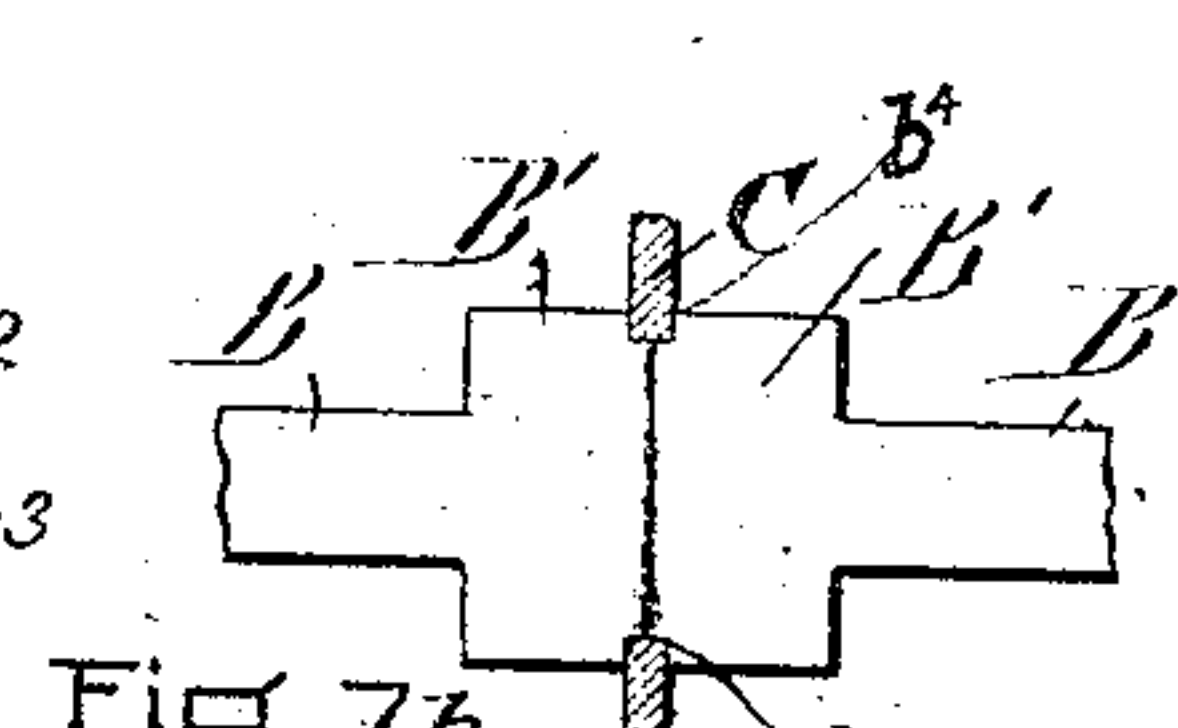


Fig. 7b.

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2 SHEETS—SHEET 2.

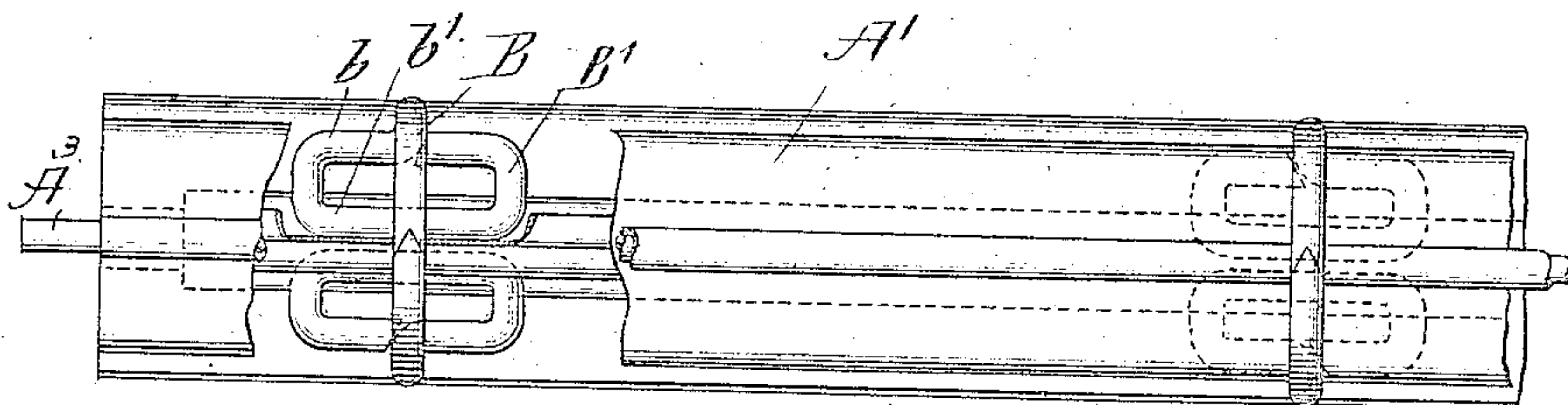


Fig. 10.

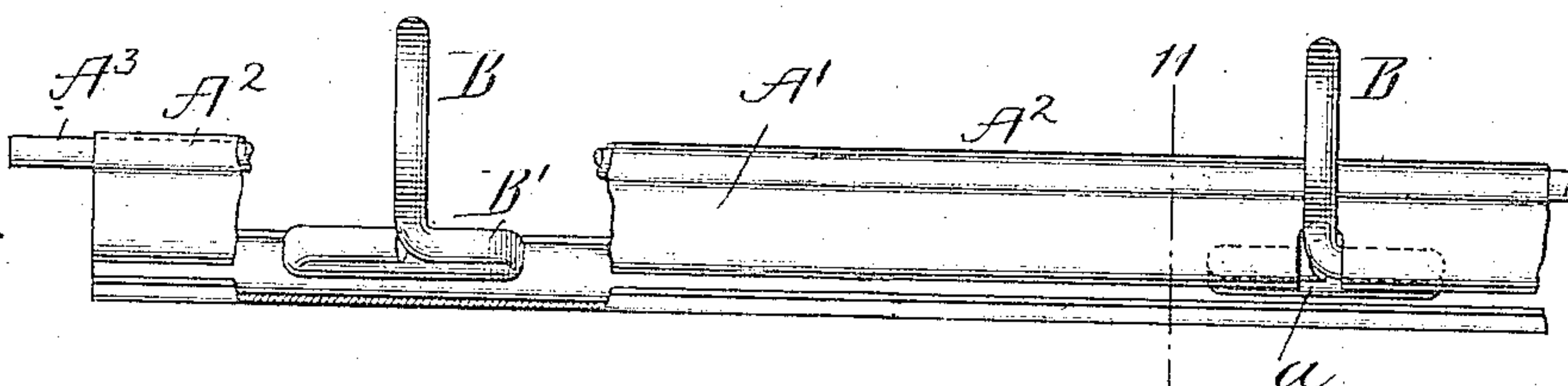


Fig. 11.

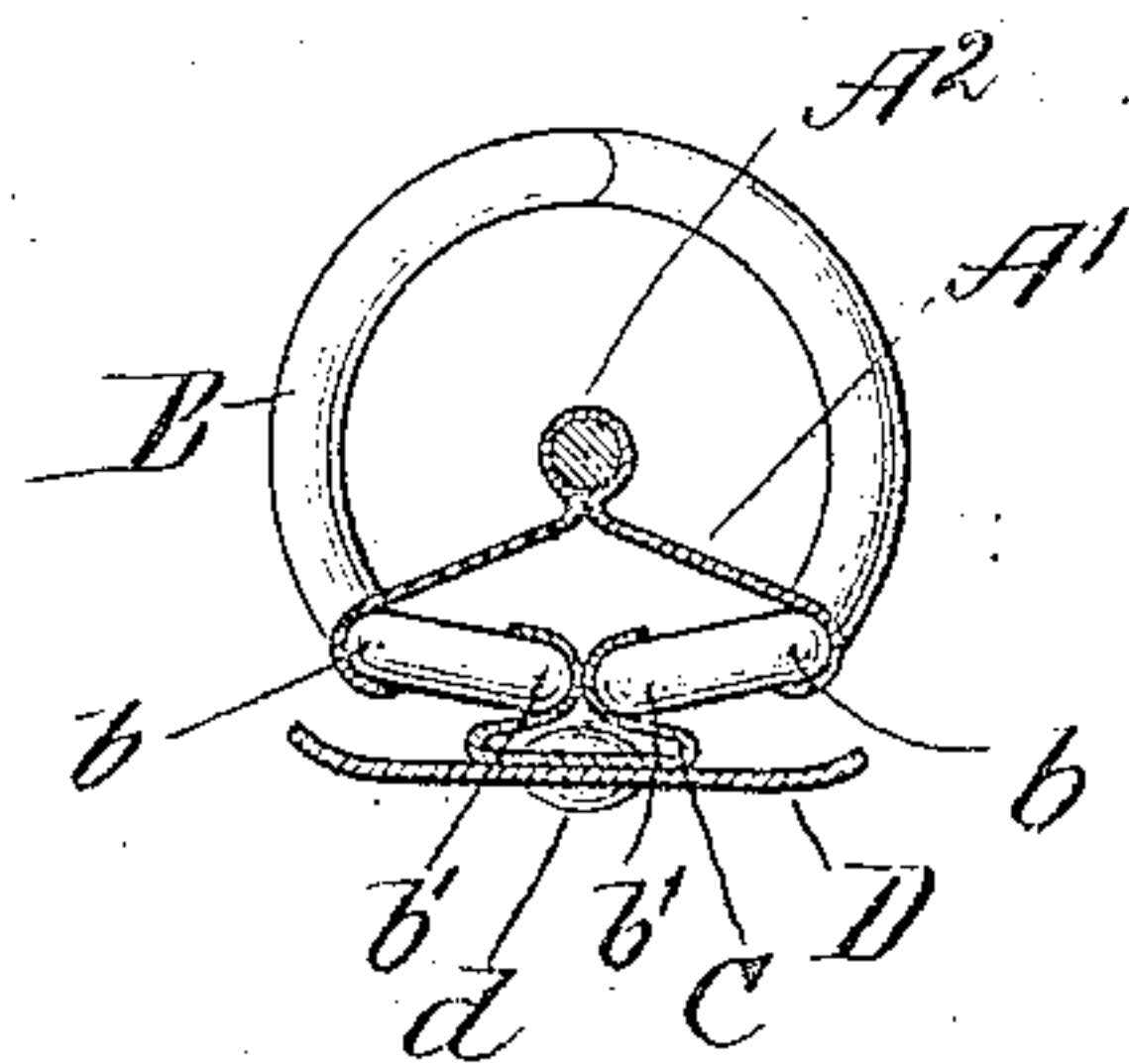


Fig. 12.

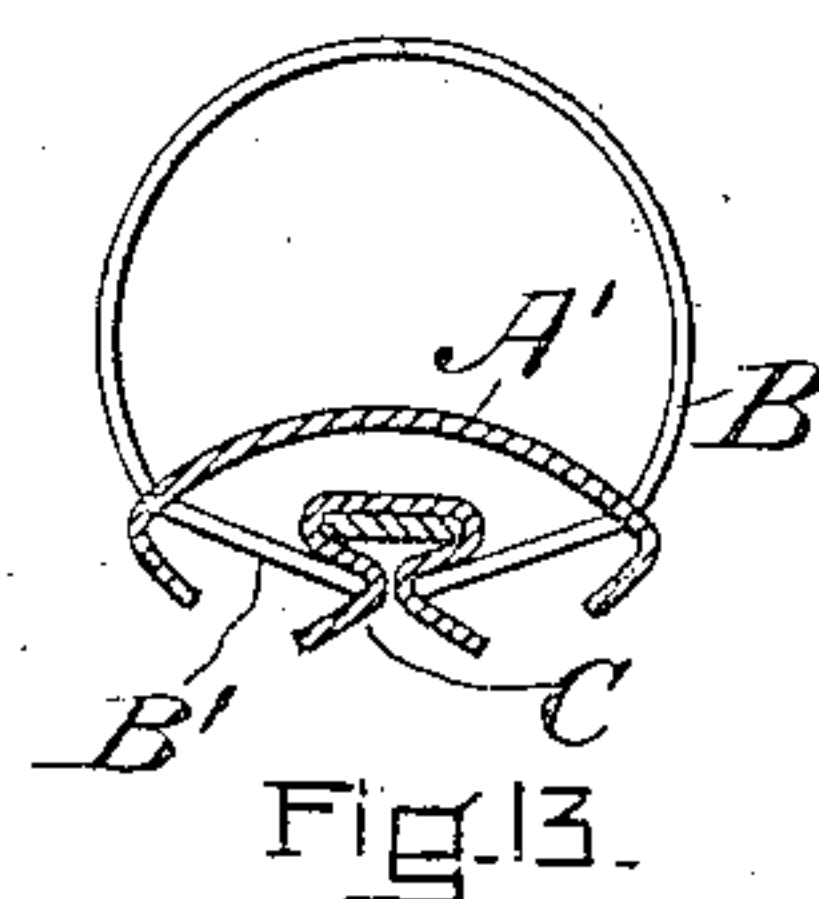


Fig. 13.

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LOOSE-LEAF BINDER.

No. 835,340.

Specification of Letters Patent.

Patented Nov. 6, 1906.

Application filed February 15, 1906. Serial No. 301,204.

To all whom it may concern:

Be it known that I, WILLIAM M. WHEILDON, a citizen of the United States, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Loose-Leaf Binders, of which the following is a specification.

My invention relates to loose-leaf binders; and it consists in sundry mechanical improvements whereof the object is to facilitate the manufacture and simplify the operation of loose-leaf binders.

In the drawings hereto annexed, Figure 1 is a plan view, partly broken away, of one embodiment of my invention. Fig. 2 is a longitudinal elevation of Fig. 1, also partly broken away. Fig. 3 is a cross-section of Fig. 2 along the line 3-3. Fig. 3^a is a cross-section similar to Fig. 3, but showing a modified form of leaf-holding binder-arches. Fig. 4 is a plan view of the upper spring-plate; Fig. 4^a, an end view of the same. Fig. 5 is a plan view of the lower spring-plate; Fig. 5^a, an end view of the same. Fig. 6 is a longitudinal elevation of the joint-piece; Fig. 7, a cross-section of the same. Fig. 7^a is a modified form of joint-piece. Fig. 7^b shows in detail the mode of assembling the binder-arches and joint-piece as shown in Fig. 7^a. Fig. 7^c shows a modified form of joint-piece adapted to use with binder-arches of the form shown in Fig. 3^a or Figs. 9, 10, and 11. Fig. 8 is a plan view of the blank from which a binder-arch is made. Fig. 9 is an edge view of the same. Fig. 10 is a top plan view of a modified form of loose-leaf binder, partially broken away. Fig. 11 is a longitudinal elevation of Fig. 10, also partially broken away. Fig. 12 is a cross-section of Fig. 11 along the line 11-11; and Fig. 13 is a cross-section similar to Fig. 3, showing a modification of the structure.

The loose-leaf binder which embodies and expresses my improvements is of that class in which the binder-arches consist of hooks, which are movable laterally to be separated or brought together in the course of use.

In the form shown in Figs. 1 to 9, inclusive, the frame or back of the binder consists, preferably, of two spring-plates A A', though, if desired, a single spring-plate may be employed. The lower or outer plate A, which may be secured by eyelets or rivets in the

usual way to a book-back, is made of spring metal, longitudinally cylindrical in curvature, or channeled, and marginally flanged. Apertures *a a* are provided for the accommodation of the hook portions of the binder-arches. The upper spring-plate A' is formed similarly to the plate A, but has slightly greater width, so that the marginal flanges of the plate A' may be readily sprung over the edges of the plate A, so as to secure the two plates together. The plate A' is provided with apertures *a'* which when the two plates are assembled, register with the apertures *a*, the two sets of apertures forming ports through which the hook portions of the binder-arches may work. The binder-arches in the form shown in Figs. 1, 2, 3, 8, and 9 are made of sheet metal, are interchangeable, and readily separable from or assembled in the complete binder. In Fig. 8 there is shown in plan one of the blanks from which the sheet-metal binder-arches are formed. This blank has the hook portion B and the base B', the entire blank being T-shaped. It is always desirable to have the ends of the opposed binder-arch hooks engage each other mutually, and ordinarily one of a pair of binder-arch hooks is pointed and the other recessed, so that the point and recess fit closely together. If, however, all of the blanks of which the binder-arches are formed were recessed or all pointed, it is obvious that when paired their ends would not engage each other suitably. I therefore form each hook portion B of my binder-arches with serrations, whereof the indentations *b*² correspond in location, size, and shape with the dentations *b*³, so that when the binder-arch blanks are bent into shape and opposed the dentation of one will fit into the indentation of the other. I have shown the hook part B as provided with one indentation and one corresponding dentation. Of these the number, of course, might be increased so long as there be an equal number of each.

When the binder-arches are bent into final shape, as shown in Figs. 2 and 3, the edge *b* of each base B' is adapted to bear against the inner side of the marginal channel of the spring-plate A and the edges *b'* of opposed binder-arches approach but do not quite reach each other. The hook portions B are inserted in the marginal apertures *a a'*, described above. Between the base parts of

the binder-arches there is placed a joint-piece C, this being a bar, or it may be a sheet-metal rod formed or bent with double channels *c*, into which the base parts B' fit. With the parts assembled as shown in Figs. 1, 2, and 3, the base parts B' are confined between and abut against the joint-piece C and the marginal channels of the spring-plate A. The lower plate A might be dispensed with, when the marginal channels of the upper spring-plate A' would serve as the outer abutments for the base parts B', provided the latter were suitably proportioned for the purpose. The joint-piece C extends from end to end of the spring-plates A A' and is accessible at its ends, short handle-pieces C' being provided whereby the joint-piece may be manually operated and pushed up or down, its movements and relative position with respect to the spring-plates A A' determining the opening or closing of the binder-arches, the base parts of the arches acting togglewise and the spring-plates exerting their stress to hold the arches either open or closed, as the case may be. The joint-piece C is longitudinally removable from between the base parts B' of the binder-arches, this movement being facilitated by pressing the two spring-plates together slightly, so as to relieve the joint-piece of their spring stress. Then after the joint-piece is removed the upper spring-plate A' may readily be sprung out of engagement with the lower plate A, when the binder-arches may be freely and easily removed.

In Figs. 10, 11, and 12 I have shown a modification of this invention wherein a single spring-plate is used and bent-wire binder-arches are provided in place of the sheet-metal binder-arches above described. The spring-plate A' shown in Figs. 10 and 11 is struck up with a central longitudinal roll or rib A² and flat lateral wings which constitute the spring-plate A' itself, these wings being marginally channeled. The binder-arches are formed of wire, the arches in this case being not universally interchangeable, as one set is pointed and the other notched. The bases B' are formed by bending the wires of which the binder-arches are composed as shown, making a base transverse to the hook portion B, the bases having each an outer bearing part *b* and an inner bearing part *b'*. The joint-piece C is struck up of sheet metal and double-channeled at *c*. The plate A' is notched or apertured at *a* to accommodate the hook portions of the binder-arches. Back plates D D' are provided wherewith to secure the book-back and covers which may be required, the inner plate D being riveted or eyeleted, as at *d*, to the joint-piece C. The means for manually operating this form of loose-leaf binder are embodied in the rib or roll A², which may be easily grasped by separating the leaves held on the binder-arches

and pressed downward. The downward movement in response to this pressure springs the base parts B' of the binder-arches togglewise and opens the hook parts B. When it is desired to close the hooks, any pair of the hooks themselves may be grasped and forced together, or the spring-plate A' may be pulled up, the operator grasping the rib or roll A², or the rod A³ may be secured inside the roll or rib A² and extend therefrom at the ends of the spring-plate A', so as to be readily grasped and manually operated.

The binder-arches composed of wire, as in Figs. 10, 11, and 12, may be interchanged for the flat metal binder-arches shown in Figs. 1, 2, 3, 8, and 9, suitable changes in the apertures *a a'* being made for the accommodation of the wire binder-arches. In Fig. 3^a there is shown in cross-section a loose-leaf binder having wire binder-arches such as described in connection with Figs. 10, 11, and 12, but otherwise constructed as described in connection with Figs. 1, 2, and 3.

Usually I believe that the friction hold of the binder-arch base-pieces upon the joint-piece will be sufficient to retain the latter in position in the binder; but in order to guard against any possible displacement I have contrived a modification shown in Figs. 7^a, 7^b, and 7^c, wherein the joint-piece C is illustrated as T-shaped in cross-section and provided with a slot *c'*. The binder-arches as shown in Fig. 7^b are notched, as at *b'*, the full width of the binder-arch base-piece being slightly greater than the length of the slot *c'*, Fig. 7^a, and the lip remaining between the notches *b'* being of broader dimensions to fit within the slot *c'*. In this construction shown in Fig. 7^b the binder-arch base-plates abut against each other and are supported by the joint-piece C, and under the normal condition of assemblage of the parts the binder-arches themselves prevent any longitudinal movement of the joint-piece. If it be desired to employ a joint-piece of this character with wire arches, the slot *c'* would merely have to be of slightly-different dimensions, as shown in Fig. 7^c, where slot *c'* is large enough to admit the base portions of the wire binder-arches, such as shown in Figs. 10, 11, and 12.

Heretofore, so far as I am aware, universally-interchangeable binder-arches have not been employed in the manufacture of loose-leaf binders, nor have binders of the toggle-joint arch class been operable by direct manipulation of either of the two parts which constitute the pivotal abutments for the toggle-joint. When the loose-leaf binder is full, it is especially unhandy to operate the binder-arches to separate them by grasping the arches themselves. Moreover, the ready assemblage and separability of the several parts of the above-described loose-leaf binder

render the same extremely easy to assemble, dismantle, or repair.

What I claim is—

1. In a loose-leaf binder, the combination of a spring-plate, binder-arches, binder-arch base-plates, a double-channeled joint-piece, and manually-accessible means to change the relative position of the spring-plate and joint-piece.

2. In a loose-leaf binder, the combination of a spring-plate, interchangeable binder-arches, each consisting of a hook part and a base transverse thereto, the bases forming a toggle-joint to hold the hook parts either open or closed under the stress of the spring-plate.

3. In a loose-leaf binder, the combination of a spring-plate, interchangeable binder-arches, each a separate T-shaped piece having a hook part and a base part transverse thereto, the bases forming a toggle-joint to hold the hook parts either open or closed under the stress of the spring-plate.

4. In a loose-leaf binder, the combination of a spring-plate, binder-arches, binder-arch base-plates, a double-channeled joint-piece, extending from end to end of the spring-plate and accessible to manual operation to change the relative position of the spring-plate and joint-piece.

5. In a loose-leaf binder, the combination of a spring-plate, interchangeable binder-arches, each a separate T-shaped piece having a hook part and a base transverse thereto, the ends of the hook parts identically serrated, with an indentation to match each dentation, the bases forming toggle-joints to hold the hook parts either open or closed under the stress of the spring-plate.

6. In a loose-leaf binder, the combination of a spring-plate, binder-arches, binder-arch base-plates, and a double-channeled joint-piece between the binder-arch base-plates, extending from end to end of the spring-plate, said joint-piece movable horizontally between the binder-arches, and accessible at the ends.

7. In a loose-leaf binder, the combination of an upper spring-plate, a lower spring-plate, the upper plate channeled marginally to embrace the lower, interchangeable binder-arches, each a separate T-shaped piece having a hook part and a base, the ends of the hook parts identically serrated with an indentation to match each dentation, a joint-piece, double-channeled, the bases of the binder-arches held between the spring-plate channels and the joint-piece channels, the joint-piece extending from end to end between the spring-plates, with its ends accessible for manual operation, to change the relative position of the joint-piece and upper spring-plate.

8. In a loose-leaf binder, the combination of an upper spring-plate, a lower spring-plate, each spring-plate channeled marginally, the channels of one embracing the channels of the other, apertures in the spring-plates to admit binder-arches, interchangeable binder-arches, each having a hook part and a base transverse thereto, a double-channeled joint-piece, between the binder-arch bases and extending from end to end of the spring-plates, the spring-plates being separable and the joint-piece longitudinally removable, and also accessible at the ends, under normal conditions, to move the binder-arch bases toggle-wise.

9. In a loose-leaf binder, the combination of a spring-plate, interchangeable detachable binder-arches each having a hook part and a base part transverse thereto, a joint-piece having slots to admit the abutting edges of the binder-arch base parts, and means, attached to the joint-piece, and manually accessible, to change the position of the joint-piece and spring-plate respectively.

Signed by me at Boston, Massachusetts, this 7th day of February, 1906.

WILLIAM M. WHEILDON.

Witnesses:

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C. D. WOODBERRY.