



# UNITED STATES PATENT OFFICE.

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## LOOSE-LEAF BINDER.

No. 798,157.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that we, HERBERT C. BLACKMER, of Melrose, and ROBERT S. ROBSON, of Somerville, in the county of Middlesex and State of Massachusetts, both citizens of the United States, have invented a new and useful Improvement in Loose-Leaf Binders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

Our invention relates to an improvement in loose-leaf binders.

The especial object of the invention is to make a loose-leaf binder in as simple a manner and at as little cost as possible, which binder shall not only be effective in the retention of the loose leaves, but one so made that the leaf-binding clips or rods forming a part thereof can be easily opened or broken apart for the reception, taking out, or replacement of the loose leaves, it being especially desirable in a loose-leaf binder that this should be easily done.

Our improved binder is especially adapted for note-books, stenographers' books, or other small memoranda, but of course can be used for books of any kind or form.

The structure can best be seen by reference to the drawings, in which—

Figure 1 shows in perspective a book fitted with the improved binder. Fig. 2 shows a cross vertical section of the same. Fig. 3 shows a portion thereof in plan, to which reference will hereinafter be made. Fig. 4 shows a longitudinal vertical section of the binder. Fig. 5 shows in section a detail thereof to which reference will hereinafter be made. Fig. 6 shows the binder in a slightly-modified form. Fig. 7 shows this modified form of the binder in side elevation.

Referring to the drawings, A represents a book having the usual elements of covers  $a^1$  and a back  $a^2$ .

$a^3$  represents the loose sheets, having holes or perforations  $a^4$  therein, by which the leaves may be impaled or strung upon the leaf-binding clips or rods, to be hereinafter referred to.

Fixed to the back of the book, which is preferably stiffened or reinforced by a fiber board or other stiff substance  $a^5$ , is a plate B. This plate is preferably made of some thin malleable metal, which is stamped into a form sub-

stantially as shown, having respective raised portions  $b^1 b^1$  and an interposed depressed portion or recess  $b^2$ , while along between its sides and raised portions the plate is made grooved and its sides are turned over to form housings  $b^3$ . The plate is fixed to the back-board of the book by rivets  $b^4$ , and it is also to be noted that between the raised portions  $b^1 b^1$  of the plate and the back-board  $a^5$  there are inserted plates  $b^5 b^6$ , made of metal, through which the rivets  $b^4$  extend, which plates act not only to reinforce the plate B, but also as space-blocks to keep said raised portions of the plate in proper form.

Along within the housings  $b^3$ , on either side of the plate B, are contained the respective wires or rods  $C C'$ . The ends of these wires or rods outside the housings are turned and bent to form the opposing clips  $c c'$ , the ends of which clips are adapted to meet in such proper conjunction that the conjoining clips form a closed bow of metal, upon which the loose leaves are arranged or impaled by the clips passing through the holes or perforations  $a^4$  therein, as before mentioned. The clips  $c c'$  are so formed and arranged in such proper opposition that their conjunction may be made or broken simply by the turning of the wires or rods  $C C'$  in their respective housings, which act as bearings therefor, the respective wires or rods then practically forming an axis upon which the clips may turn back and forth. It is arranged, however, that one set of clips should be fixed in a permanent position, for which purpose the wire or rod C, bearing the clips  $c$ , is provided with an offset  $c^2$ , made by bending the wire. This offset extends into the depressed portion or recess  $b^2$  in the plate B and is secured to the plate by soldering or other fastening. The offset keeps the wire or rod C from turning, and so holds the clips  $c$  in a permanent fixed position or where they may meet in proper conjunction with the clips  $c'$ . As for the clips  $c'$ , they are left free to turn on their axis  $C'$  to and from the clips  $c$ , making and breaking connection therewith, and as a means for holding the clips  $c'$  under tension to conjoin with the clips  $c$  there is formed in the wire or rod  $C'$ , forming the axis of the clips, an offset  $c^3$ , made by bending the wire or rod  $C'$ . This offset  $c^3$  projects into the recess  $b^2$ , formed in the plate B, and at such inclination as to receive

the tensional bearing stress of a spring-plate D, which is placed over the plate B and is preferably fixed to the same by the rivets  $b^3$ , which secure said plate B to the back of the book. By the bearing of this spring-plate D against this offset in the wire or rod C' the clips  $c'$  are held under tension in proper conjunction with the clips  $c$ . The adaptation of the spring-plate D is such, however, that though normally acting to thus hold the clips  $c'$  the clips may still be easily turned back or their connection broken with the clips  $c$  against the resisting tension of the spring, for when the clips  $c'$  are turned back from the clips  $c$ , turning upon the wire or rod C' as an axis, then the spring will readily yield to the pressure of the offset on said wire as it is turned by the drawing back of the clips. Furthermore, the arrangement of the offset in its relation to the spring is such that when the clips are turned back fully opened then the offset will be turned to a point where it will be substantially perpendicular with respect to the plate D or where it will receive such direct tensional stress of the spring as will hold it fixed or wedged, as it were, in between the spring and the plate, by which means the clips  $c'$  will be held open. To keep the offset  $c^3$  from being turned back too far or where it might slip off the edge of the spring, and so become displaced, the side edge  $c^4$  of the plate B is turned up flange like to act as a stop for the offset.

As a means for holding the rotary clips  $c'$  locked in conjunction with their complementary clips  $c$  there is shown a screw E, having a locking head or nut  $e$ . This screw is passed through the spring-plate D, so that its head will bear against the same, and the screw is threaded into the space block or plate  $b^2$ . When this screw is loosened, the spring-plate D can yield to the pressure of the offset  $c^3$  in the wire or rod C', and upon turning the screw, which may be done by any suitable means, the head thereof will bear against the spring-plate D, so that it cannot yield to the bearing stress of the offset, preventing the clips being turned back and so holding them locked in place.

In Figs. 6 and 7 there is shown a modified means of practicing the invention. This consists, essentially, in the fact that movable clips only are used and these bent in such manner as to singly retain the loose leaves. In other words, the permanently-fixed clips previously shown and described are dispensed with. Referring, therefore, to these figures, there is shown a plate F, adapted to be fixed to the back of the book, the side edges of which plate are turned, forming housings  $f, f'$ , in which is contained the wire or rod F'. This wire has an offset  $f^2$ , and the ends of the wire are turned and then bent in such a manner as to form clips  $f^3$ , which are sufficiently long to conjoin with a plate F<sup>2</sup> when retaining the

loose leaves. This plate F<sup>2</sup> is placed over the plate F and is preferably secured to it by rivets  $f^4$ , which rivets also may well be used to secure the plate F to the back of the book. The plate F<sup>2</sup> is provided with a spring portion  $f^5$ , coming over the offset  $f^2$  in the wire or rod F', and the end of the plate is turned over, forming a flange  $f^6$ , acting as a stop for said offset. The relative operative relationship of these parts is substantially like those before described, the ends of the clips being held normally in conjunction with the plate F<sup>2</sup> by the action of the spring, which yields when the clips are turned back for the taking out or replacement of loose leaves. The essential point to be noted, however, is that the fixed clips are dispensed with, and the movable clips, bent as they are, alone form the complete bow of metal for the retention of the loose leaves. We prefer, however, to use the method of constructing the binder first described.

A binder for loose leaves made in the manner described is of exceedingly simple construction and can be made at very little cost, for the plate B can easily be stamped out, the wires C C' can be bent in dies or otherwise formed, and the spring D is merely a plate. The parts can then be combined by two or more rivets, which not only act to combine the parts, but also to fix them to the back of the book. The means for the retention of the clips is such also that they are retained in proper normal conjunction for the retention of the loose leaves even without the aid of the lock, which is, in fact, but an auxiliary attachment. The clips can easily be broken apart for the insertion or taking out of leaves, and this operation is facilitated by the fact that when the clips are broken apart they remain open until a proper arrangement of the loose leaves has been made, when they can again be brought into conjunction or closed by an easy pressure upon them.

Having thus fully described our invention, we claim and desire to secure by Letters Patent of the United States—

1. A loose-leaf book having a binder with movable clips formed from the turned or bent ends of a common connecting rod or wire, a support for said connecting rod or wire, in which the same has bearing to turn, said rod or wire having an offset in a portion or part thereof, a spring-plate placed lengthwise over said support and the rod or wire contained therein, covering the same, said spring-plate being adapted to bear with tension against the offset on the rod or wire and to yield to the same when the rod or wire is turned, and fastenings joining said plate and support and acting as a common fastening therefor to the back of the book.

2. In a loose-leaf book, a binder having sets of coacting clips, each set being formed from the turned opposite or bent ends of two

common connecting rods or wires, a plate-support for the same, said support having raised edges, means combining therewith to form bearings or housings along the side edges of said plate for said connecting rods or wires and in which one of said connecting rods or wires has bearing to turn, means for fixing the other of said rods or wires to be immovable, an offset formed in a portion of said movable rod or wire, a spring-plate placed lengthwise over said plate-support and covering the same and the wires contained therein, which spring-plate is adapted to press with tension against the offset on said movable rod or wire or yield to the same when said rod or wire is turned, and means for fastening said plate.

3. In a loose-leaf book, a binder having movable clips, said clips being formed upon the turned or bent ends of a connecting wire or rod, said wire or rod having an offset in a portion thereof, means for supporting said wire or rod whereby it forms an axis upon

which said clips may turn, a spring-plate arranged to bear against said offset, and means for retaining said plate whereby it cannot yield to the pressure of said offset and by which means said clips are held locked in place.

4. In a loose-leaf book, a binder having movable clips, said clips being formed upon the turned or bent ends of a connecting wire or rod, said wire or rod having an offset in a portion thereof, means in the back of the book for mounting said wire or rod to turn, a spring-plate arranged to bear against said offset, a screw passing through said plate having a head to bear against the same, and means in which said screw is adapted to turn, substantially as and for the purposes set forth.

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In presence of—  
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