Sept. 13, 1932. E. W. CARPENTER 1,876,569

BOOSTER FOR LOOSE LEAF METALS

Filed May 21, 1931

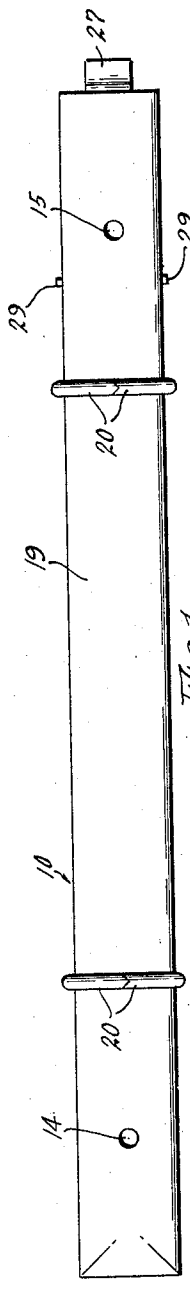


FIG. 1.

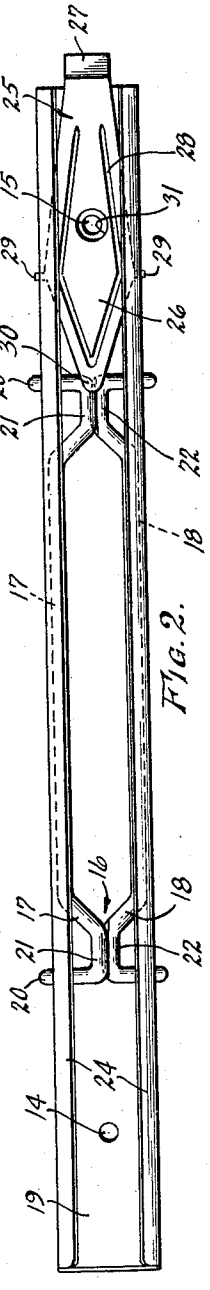


FIG. 2.

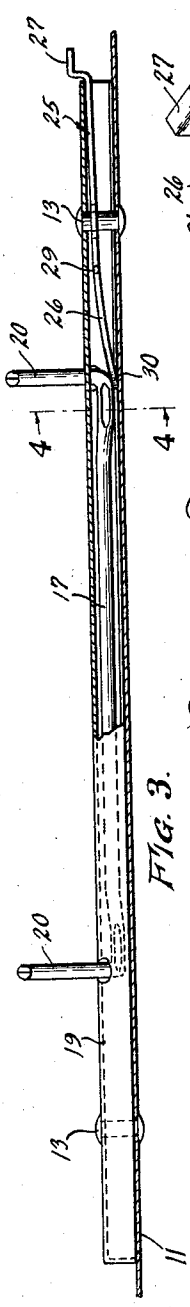


FIG. 3.

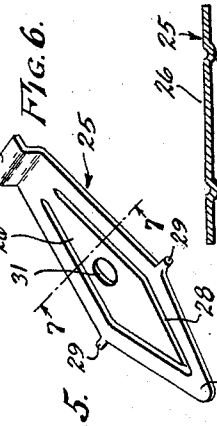


FIG. 5.

FIG. 6.

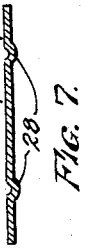
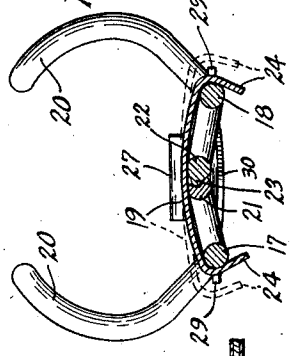


FIG. 7.



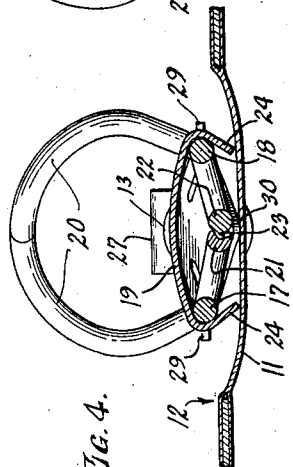


FIG. 4.

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Patented Sept. 13, 1932 1,876,569

UNITED STATES PATENT OFFICE

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BOOSTER FOR LOOSE LEAF METALS

Application filed May 21, 1931. Serial No. 538,938.

This invention relates to new and useful improvements in boosters such as are used in the metals of loose leaf binders for opening the rings to permit insertion or removal of the sheets of paper.

An object of the invention is to provide a loose leaf binder including a booster and mounting therefor which does not require rivets and which includes a pair of opposite disposed ears or lugs rockably received in openings in the metal of the binder, the said ears being inserted in the openings as the metal is closed on the wire of the binder whereby the booster is pivotally mounted.

In the accompanying drawing a satisfactory embodiment of the invention is shown and such embodiment will later be described in detail. However, it will be understood that the invention is not necessarily limited to the precise details of construction shown and that variations may be made without departing from the scope of the appended claims.

In the drawing:

Fig. 1 is a top plan view of the metal of a loose leaf binder, the said metal being equipped with a booster in accordance with the present invention;

Fig. 2 is a bottom plan view of the same;

Fig. 3 is an edge view partly in elevation and partly in section and showing the booster;

Fig. 4 is a transverse sectional view substantially on the line 4—4 of Fig. 3, the wires being shown closed;

Fig. 5 is a view similar to Fig. 4 the wires being shown as having been operated to open position;

Fig. 6 is a perspective view of the improved booster removed from the metal; and

Fig. 7 is a sectional view substantially on the line 7—7 of Fig. 6.

Referring in detail to the drawing the metal of a loose leaf binder is shown at 10 and in Figs. 3 and 4 the metal is shown as attached to the back of flexible portion 11 of a binder fragmentarily shown at 12, as by a rivet 13 passing through an opening 14 in the metal. The opening 14 is at one end of the metal and there is a corresponding opening 15 at the other end and adapted to receive a rivet for the purpose of securing the metal to a binder.

Metal 10 includes the wire 16 comprising sections 17 and 18 secured for cooperation as by means of the sheet-metal member 19. The sections 17 and 18 have their end portions offset to extend upwardly and curved toward one another to provide the portions 20 adapted when the wire is closed to form a loop as usual and as shown in Fig. 4. Intermediate their ends the respective wires have inwardly offset and abutting portions 21 and 22 respectively and the portions 21 are grooved while the portions 22 carry ribs 23 entering into the grooves of the portions 21. In this way a toggle is formed and when the portions are below their centers as shown in Fig. 4 the end portions 20 of the sections of the wire form a loop. When these portions 21 and 22 are moved upwardly slightly beyond their center they carry up to the position shown in Fig. 5 with the result that the end portions 20 move apart as shown in that figure.

The sheet metal member 19 encloses the greater portions of the sections forming the wire 16 and it will be seen that this sheet-metal member includes downwardly extending side portions 24 which embrace portions of the wire and since the member 19 has a certain resiliency it assists in the operation of the wire either to open the loops formed by the end portions 20 or enclosing the same. That is, when the abutting portions 21 and 22 of the sections forming the wire are moved up beyond their centers from their positions shown in Fig. 4 they will be snapped or carried upwardly to their extreme position due to the resiliency of the member 19. When the sections are moved downwardly beyond their centers from the position shown in Fig. 5 the member 19 will again act to carry them to their extreme position.

According to the present invention a novel booster is provided for operating the sections 17 and 18 of the wire whereby to move the end portions 20 of the sections apart to open the loops. This booster is probably best shown in Figs. 6 and 7 and is generally indi-

cated by the reference characters 25 as here shown includes a somewhat diamond-shaped body 26 having one end portion offset upwardly to provide a finger piece or operating piece 27. Since the booster 25 is shown as formed of sheet-metal it may have strengthening ribs 28 which ribs extend generally in the direction of the length of the booster.

Extending laterally from the longitudinal edges of the body 26 of the booster and preferably formed integral with such body are mounting ears 29. These ears 29 are adapted to be received for pivotal or rocking movement in openings formed in the downwardly extending portions 24 of the member 19 of the binder metal. Ears 29 are formed intermediate the ends of the body 26 of the booster and preferably extend from the opposite high points of the longitudinal edges of the booster.

As clearly shown in Figs. 2 and 3 the booster is mounted in one end portion of the metal and is so positioned that its operating end 30 is disposed below the offset portions 21 and 22 adjacent one of the ends of the wires 16. It will be obvious from Fig. 3 that by pressing downwardly on the operating portion 27 of the booster the end 30 will be moved upwardly and will operate the wires to break the toggle and thus to bring about an opening of the loops. To accommodate the rivet which is passed through the opening 15 in the metal to assist in securing the metal to a binder the booster itself is provided with a relatively large opening 31 in order that the booster will not engage the rivet.

Fig. 5 shows in dotted lines the position of the parts or portions 24 of the sheet-metal member 19 before such portions are moved into their final position or before said portions are closed. While the portions are in this position the booster is inserted into place and when the member 19 is closed on the wires 16 it will also close on the booster and the booster will be properly mounted in the member for pivotal movement.

Having thus set forth the nature of my invention, what I claim is:

1. In a loose leaf binder, a metal including a pair of wires having their ends bent to form portions of loops and movable toward and from each other to close and open the loops, said wires having portions forming a toggle, a piece of resilient sheet metal substantially inclosing the portions of the wires forming the toggle and tensioning the same, said sheet-metal having a pair of openings, a booster for engaging the toggle to open the loops, and said booster having a pair of ears disposed in said openings in the sheet-metal whereby the booster is pivotally mounted.

2. In combination, a loose leaf metal including wires forming separable loops and having a toggle connection, a piece of resilient sheet-metal substantially enclosing the portions of the wires forming the toggle and tensioning the same, said piece of sheet-metal substantially U-shaped in transverse section and having a pair of oppositely disposed openings in its side walls, a booster for breaking the toggle, said booster having a pair of ears formed integrally therewith and disposed in said openings whereby to pivotally mount the booster on the metal, and said openings spaced from the edges of said side walls whereby the booster is held in place in any position of the metal.

3. In combination, a loose leaf metal, said metal having a pair of oppositely disposed openings therein, a booster, said booster comprising a substantially diamond-shaped section of sheet-metal having longitudinally extending strengthening ribs pressed therein and having laterally extending ears on its opposite longitudinal edges, and said ears disposed in said openings whereby to pivotally mount the booster.

4. In a loose leaf binder, a sheet-metal casing having inturned side portions, wires bent to form loops having separable sections extending over the top of the casing, said wires including portions enclosed in said inturned portions and inwardly extended arched portions having engaging tongues and grooves to form a toggle connection between them, said casing having openings through its side portions in spaced relation to its edges, a booster, ears on said booster and pivotally received in said openings, and said booster engaging under one of said toggles and accessible outside the casing for operation to break the toggle and operate the separable sections.

5. The method of pivotally mounting a booster in a loose leaf metal including a sheet-metal casing, the said method consisting in providing the casing with a pair of oppositely disposed perforations, providing a booster with a pair of oppositely projecting ears, disposing the booster with its ears in alignment with said perforations, and pressing the perforated portions of the casing toward the ears to locate the ears in the said perforations.

In testimony whereof I affix my signature.

EDWARD W. CARPENTER.