July 23, 1963 F. WANCE 3,098,490

LOOSE LEAF RING BINDER

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Fig.1.

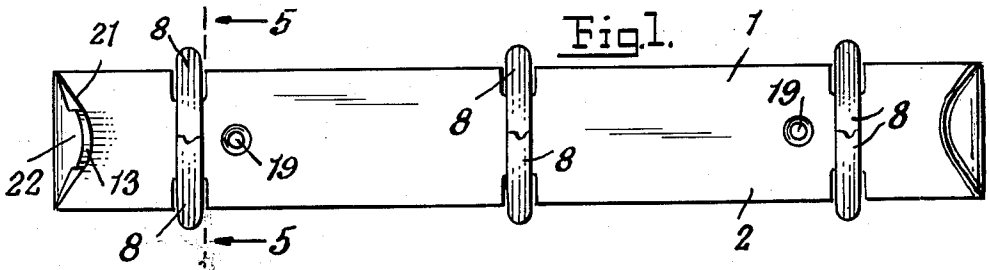


Fig.2.

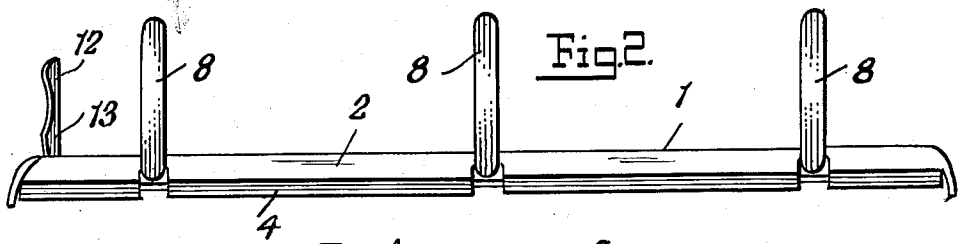


Fig.3.

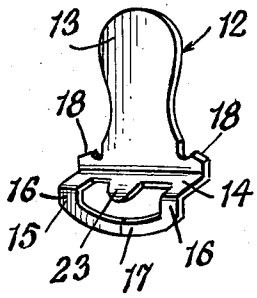


Fig.4.

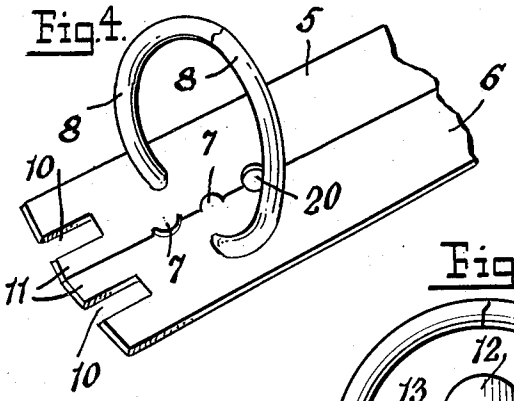


Fig.5.

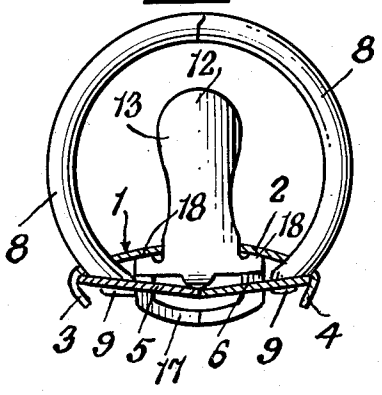
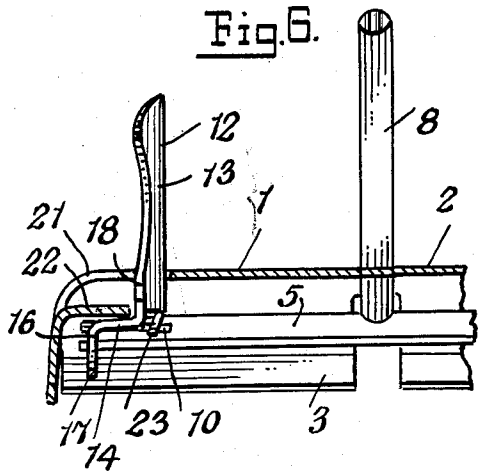


Fig.6.



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Fig. 7.

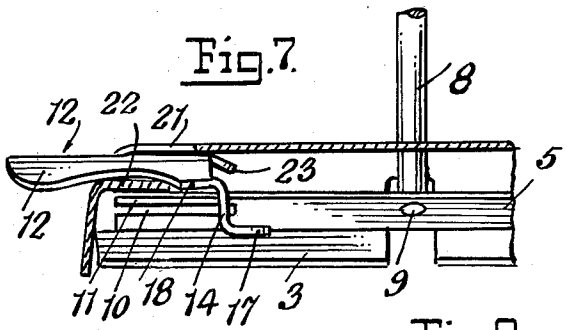


Fig. 8.

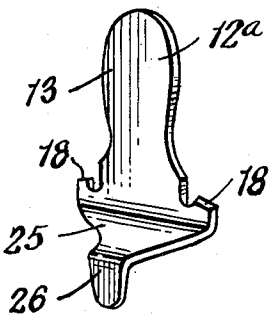


Fig. 9.

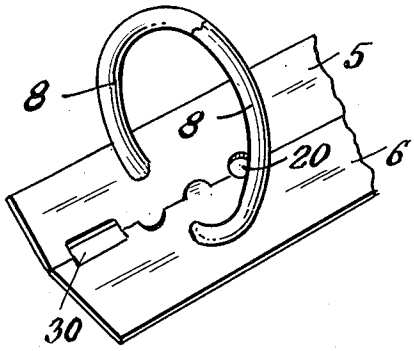


Fig. 10.

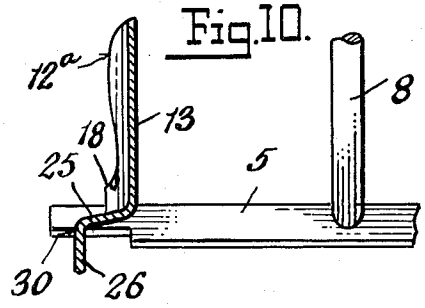
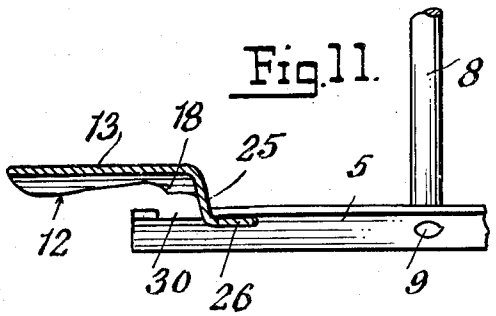


Fig. 11.



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LOOSE LEAF RING BINDER

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1 Claim. (Cl. 129—24)

This invention relates to loose-leaf binders of the type in which the sheets or leaves are retained upon rings which are composed of halves or segments that can be opened or separated to place the leaves on them or remove them from the rings.

It is an object of the invention to provide ring opening and closing means, located at one end of the binder strip, by which the ring segments are opened or closed, and which means shall be arranged so that it will be locked when the ring segments are closed, thereby preventing possible inadvertent separation or opening of the ring segments during the normal use or handling of the binder.

More particularly, the invention contemplates the provision of a ring binder in which the ring halves are borne by plates disposed within a springy housing and which plates, by their movement to a downward inclination, cause the ring halves to be brought together to closed position, which plates are moved to such position by an operating lever mounted for pivotal movement in one end of the housing and having parts which wedge between the plates and the housing to thereby secure a locking effect to maintain the plates in their downwardly inclined relationship and keep the ring halves in closed position.

With these and other objects to be hereinafter set forth in view, I have devised the arrangement of parts to be described and more particularly pointed out in the claim appended hereto.

In the accompanying drawings, wherein an illustrative embodiment of the invention is disclosed,

FIG. 1 is a top plan view of a ring-binder strip constructed according to the invention;

FIG. 2 is a side elevational view of the same;

FIG. 3 is a perspective view of the operating lever;

FIG. 4 is a perspective view of parts of the ring-bearing plates;

FIG. 5 is a sectional view, taken substantially on the line 5—5 of FIG. 1, looking in the direction of the arrows;

FIG. 6 is a longitudinal sectional view through the assembly, showing the position which the parts thereof assume when the rings are in closed position;

FIG. 7 is a similar sectional view showing the parts with the rings in open position;

FIG. 8 is a perspective view of another form of operating lever;

FIG. 9 is a perspective view of parts of the ring-bearing plates of a construction used for the acceptance of the locking lever shown in FIG. 8;

FIG. 10 is a sectional view through the lever of FIG. 8 showing its relationship to the ring-bearing plates while the rings are in closed position, and

FIG. 11 is a similar view showing the position of the parts when the rings are in open position.

Referring to the drawings, 1 generally indicates the elongated springy housing or shield of the type usually employed in ring binders. The housing or shield is provided with an upwardly-arched top panel 2 and is provided along its opposite longitudinal edges with integrally formed inturned flanges indicated respectively at 3 and 4.

Confined within the housing or shield 1 and positioned between the side flanges 3 and 4 is a pair of similar metal plates indicated respectively at 5 and 6. These plates 5 and 6 are arranged in side-by-side relation with their longitudinal meeting edges in contact, which edges are so

maintained by means of lugs 7 formed at the edges of the plates as shown in FIG. 4. Each ring is composed of two segments or halves 8 and the ends of the ring halves are secured to the plates 5 and 6 by being riveted, welded or otherwise secured to them, as shown at 9. In the closed position of the ring segments, as shown in FIGS. 1, 4 and 5, the two plates 5 and 6 carrying these ring segments, incline downwardly from their outer edges toward their point of edge contact, as shown in FIGS. 4 and 5. When the ring segments are opened or spread apart, the plates incline upwardly from their edges to their point of edge contact. The plates are able to assume their upward or downward inclination due to the resilience or springiness of the body of the housing or shield 1. The structure thus far described is known in binder construction.

Each of the plates 5 and 6 is provided in one end with a rectangular aperture or notch 10, each of the plates thus having a tongue portion 11, the two tongue portions 11 being disposed in side-by-side relationship between the two apertures or notches 10 as clearly shown in FIG. 4.

The operating lever is generally indicated at 12, the same consisting of a metal stamping, and it includes a transversely-curved finger piece 13. At one end, the finger piece 13 is bent laterally as shown at 14, the outer end of the laterally-bent portion 14 being bent downwardly as shown at 15. The result of the construction just described is the formation of a loop member on the end of the finger piece 13, the same being defined by side bars 16 connected at the bottom by a curved cross piece 17. At the opposite sides of the finger piece near its lower end are provided angular shoulders 18.

The binder strip assembly, shown in FIGS. 1 and 2, is mounted in a binder by rivets or other equivalent fastening elements extending through holes 19 provided in the housing or shield 1 and passing through holes 20 in the plates 5 and 6 and vertically aligned with the holes 19. At one end, the housing or shield 1 is slit as shown at 21, and a resilient tongue 22, formed out of the body material of the housing, and constituting a spring element is directed inwardly for engagement against the lever 12.

From the foregoing, the operation of the device will be clear. The lever 12 extends through the opening in the end of the housing 1, which opening is the result of slitting the end portion of the housing at 21. The closed position of the rings is shown in FIGS. 4, 5 and 6, wherein it will be noted that the plates 5 and 6 slant downwardly from their outer side edges to their point of contact with one another down the longitudinal center line of the binder strip. At this time, the lever 12 is disposed in a vertical or upstanding position, as shown in FIG. 6, the side bars 16 of the lever extending through the apertures 10 in the plates 5 and 6. It will be noted that within the loop of the lever 12 there is located an angularly disposed lip 23 which, in the vertical or upstanding position of the lever, is disposed against the tongues 11, 11 of the plates 5 and 6, thereby maintaining the plates in the downwardly-inclined positions and the ring segments resultantly closed. It will be further observed that at the same time, the shoulders 18 on the lever are wedged under and against the top panel 2 of the housing 1, thus maintaining the housing against any flexing movement. The result of this arrangement is that the device is locked in its closed position and the ring segments will not become separated except by manual movement of the lever 12 to a lowered position.

To open the rings, or to separate the segments thereof, the lever 12 is manually moved to a lowered or horizontal position substantially as shown in FIG. 7. When the lever 12 reaches a position of approximately 45 degrees on its downward swing, the wedging effect between the plates 5 and 6 and the housing 1 by parts of the lever is discontinued and as the lever continues its downward

swing, the plates 5 and 6 will be elevated to their position of upward inclination, to thereby move the ring segments to separated positions. The device in its open position is shown in FIG. 7. To close and lock the rings merely requires moving the lever 12 to the vertical position shown in FIG. 6. On its raising movement the lever 12 has its lip 23 brought into contact with the tongues 11, 11 of the plates 5 and 6 and depresses them, and when the lever reaches an approximate 45 degree position, the plates 5 and 6 will have been depressed sufficiently to bring the ring segments together. Further upward movement of the lever 12 brings the shoulders 18 under the top panel 2 while the lip 23 bears down on the plates 5 and 6 so that the lower portion of the lever is wedged between the housing 1 and the plates 5 and 6 to lock the ring segments in closed relationship.

In the embodiment of the invention shown in FIGS. 8 to 11 inclusive, the lower portion of the lever 12*a* is bent laterally as shown at 25 and is provided with a down-turned lip 26. In this embodiment of the invention, the plates 5 and 6 have their opposite longitudinal abutting edges notched to co-operate in the formation of a rectangular opening 30 near one end of the plates and through which the lip 26 extends.

The operation of this embodiment of the invention is substantially similar to that of the embodiment shown in FIGS. 1 to 7 inclusive. When the lever 12*a* is in its upright position, as shown in FIG. 10, the horizontal part 25 depresses the plates 5 and 6 to the downwardly inclined position of FIGS. 9 and 10, with the shoulders 18 of the lever taking under the housing or shield 1 as described in connection with the first embodiment.

When the lever is lowered, as in FIG. 11, the wedging action of the parts of the lever between the housing and plates 5 and 6 is released and the plates can be inclined to the proper position to cause the ring halves to be separated.

By means of the mechanism described a firm and secure locking action is attained so that the possibility of the ring halves being separated or opened inadvertently is avoided.

Having thus described embodiments of the invention, it is obvious that the same is not to be restricted thereto, but is broad enough to cover all structures coming within the scope of the annexed claim.

What I claim is:

A ring binder having an elongated housing provided with opposite flanged edge, a pair of ring-carrying plates disposed within the housing and confined between the flanges thereof, the plates carrying ring halves which are brought to closed position by downward inclination of the plates from their outer edges and are brought to a separated position by upward inclination of the plates, each of the plates having a notch in one end, the notches being separated by parts of the plates, a ring opening and closing lever entering the housing at one end and being pivotally movable between a raised position to close said ring halves and a lowered position to open said ring halves, said lever having an upper body portion and having at its lower end a closed loop with the legs thereof joining the said body portion, the upper portion of said loop being bent in a direction transversely of the plane of said lever, and the lower closed portion of said loop extending downwardly from said upper portion generally in the direction of the plane of said lever, the legs of said loop extending through said notches and the closed lower end of said loop being located below the said plates, the body portion of said lever having a lip projecting between the legs of said loop for operative engagement against the top faces of the plates at a point between the notches, and said lever further having upwardly directed stop shoulder means engageable with said housing when said lever is in raised position.

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