April 29, 1941. J. A. GIBSON 2,239,958

LOOSE LEAF BINDER

Filed Oct. 30, 1939

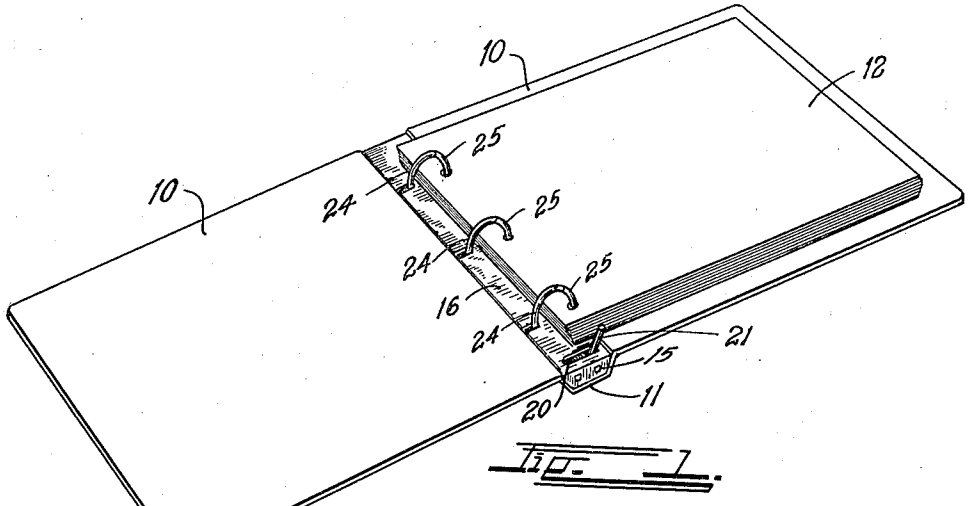


Fig. 1.

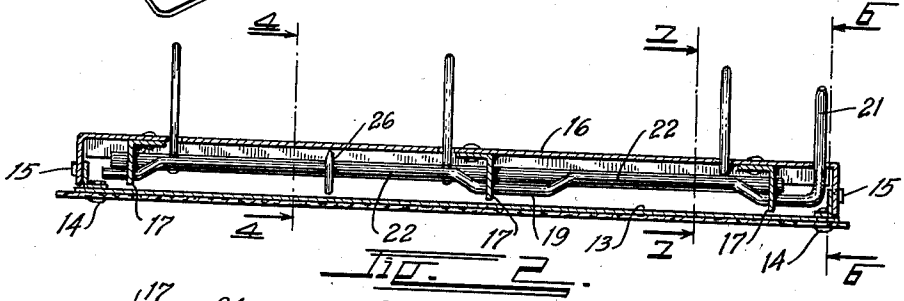


Fig. 2.

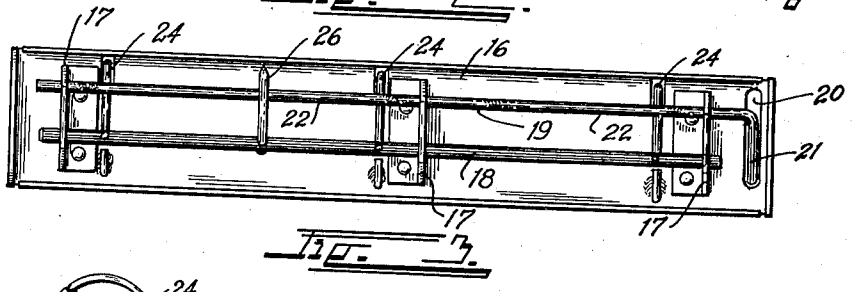


Fig. 3.

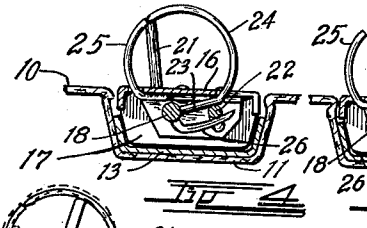


Fig. 4.

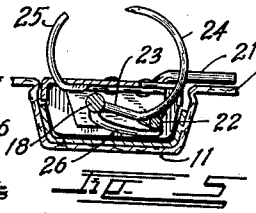


Fig. 5.

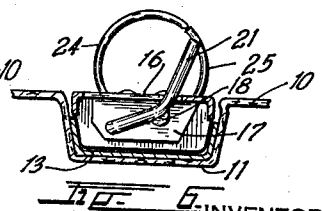


Fig. 6.

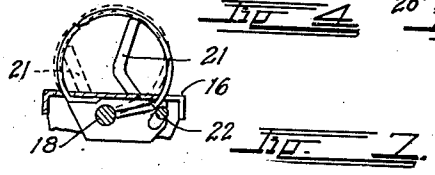


Fig. 7.

INVENTOR
JOSEPH A. GIBSON.
BY
ATTORNEY

Patented Apr. 29, 1941 2,239,958

UNITED STATES PATENT OFFICE

2,239,958

LOOSE-LEAF BINDER

Joseph A. Gibson, Kimball, Nebr.

Application October 30, 1939, Serial No. 301,927

4 Claims. (Cl. 129—24)

This invention relates to a loose-leaf binder and has for its principal object the provision of a neat, light-weight, simple and efficient binding device for loose-leaf sheets which can be quickly and easily opened for the reception or removal of sheets; which when closed, will automatically lock itself in the closed position; and in which the entire operation can be controlled by an easily accessible operating lever which will not project beyond the binder when the latter is closed.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

Fig. 1 is a perspective view of a loose-leaf volume with the invention in place therein.

Fig. 2 is an enlarged longitudinal section through the binding mechanism.

Fig. 3 is a bottom view of the binding mechanism with the back cover plate removed.

Figs. 4 and 5 are cross sections, both taken on the line 4—4, Fig. 2, illustrating the binder in the locked and open positions, respectively.

Fig. 6 is a similar cross section, taken on the line 6—6, Fig. 2.

Fig. 7 is a diagrammatic view illustrating the passage of the binder from the closed to the locked position.

In the drawing, typical binder boards of a loose-leaf binder are indicated at 10 connected by means of a flexible back cover 11. This invention is desired to be secured to the back cover 11 for holding paper sheets or leaves, such as indicated at 12, between the boards 10.

In attaching the binder, a channel-shaped back cover plate 13 is riveted to the backing 11 by means of suitable rivets 14. These rivets also attach hooked clips 15 to the extremities of the plate 13. The hooked clips secure a binding frame member 16 in place. The frame member is formed in the shape of an inverted box having downwardly turned sides and ends. The ends are perforated for receiving the hooks of the hooked clips 15, and after the latter are turned downwardly, the frame 16 is fixedly secured in place therein.

A series of angle bracket members 17 are secured within the member 16 and rotatably support, in parallel relation, a binder shaft 18 and a crank shaft 19. One extremity of the crank shaft 19 extends outwardly through a slot 20 adjacent one extremity of the member 16 to form an operating lever 21. The crank shaft intermediate the brackets 17 is offset to form relatively long offset, crank portions 22.

The binder shaft 18 is provided with a plurality of binding members which extend first radially from the shaft to form straight radial portions 23 and thence curve circumferentially around the shaft axis to form arched portions 24. In the closed position, the extremities of the arched portions enter depressions in fixed, curved posts 25 which are rigidly secured to the member 16. The offset portions 22 of the crank shaft contact the binding members within the binding frame member 16.

Let us assume that the binder is in the open position of Fig. 5. If the operating lever is swung toward the posts 25, the offset portions of the crank shaft will ride against the arched portions 24 of the binding members swinging the latter forwardly and across to the closed position. When the latter reach their closed positions the offset portion of the crank shaft has approached the point of intersection between the straight portions 23 and the arched portions 24, as shown in Fig. 7. If the lever is moved further, the offsets of the crank shaft will distort the arched portions, as shown in broken line in Fig. 7, and snap past the point of intersection to the position of Fig. 4. When in the latter position, it will be impossible to pull the arched portions open since the straight portions thereof cannot swing the crank shaft backward.

An opening prong 26 is projected from the binder shaft 18 in a position parallel to, but spaced from, the straight portions 23 so that it will contact the opposite side of the crank shaft. When the operating lever is swung in the opening direction, it acts first to snap the cranks from beneath the intersecting points of the binding members, then causes the cranks to pull the opening prong 26 downwardly to rotate the binder shaft and open the arched portions to the position of Fig. 5.

It is desired to call particular attention to the lock action of the binder. This action is caused by the relatively sharp intersecting point between the arched portions 24 and the straight portions 23 of the binding members. In snapping past these points, the entire binding ring is slightly sprung so that when in the locked position, all parts will be tightly forced together.

While a specific form of the improvement has been described and illustrated herein, it is desired to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:

1. A binder mechanism for loose-leaf binders comprising: a frame member; a binder shaft extending longitudinally of said frame member on the rear side thereof; a series of fixed binding posts projecting from the front side thereof; a series of parallel, radial binder members secured to said binder shaft; arched binders extending upward from the outer free ends of said radial members; a crank shaft positioned parallel to said binder shaft; and offset portions on said crank shaft contacting said binder members.

2. A binder mechanism for loose-leaf binders comprising: a frame member; a binder shaft extending longitudinally of said frame member on the rear side thereof; a series of fixed binding posts projecting from the front side thereof; a series of parallel, radial binder members secured to said binder shaft; arched binders extending upward from the outer free ends of said radial members; a crank shaft positioned parallel to said binder shaft; and offset portions on said crank shaft contacting said binder members, said shafts being so positioned that the offset portions of the crank shaft will snap past the joining portions of the radial and arched binder members after the latter have reached their closed positions.

3. A binder mechanism for loose-leaf binders comprising: a frame member; a rotatable longitudinal member extending throughout the length of said frame member on the rear side thereof; a series of fixed binding posts projecting from the front side thereof; a corresponding series of arched binding members fixed at their one extremities to said longitudinal member and projecting at their free extremities through openings in said frame member to said front side to coact with said binding posts; a crank shaft on the rear of said frame member, said crank shaft having offset portions positioned so that when said crank shaft is rotated they will contact said arch members between said longitudinal member and the free extremities of the arch members to force the latter to engage the fixed binding posts; means for locking said arch members in the engaged position; and means for rotating said crank shaft.

4. A binder mechanism for loose-leaf binders comprising: a frame member; a binder shaft extending longitudinally of said frame member on the rear side thereof; a series of fixed binding posts projecting from the front side thereof; a series of parallel, radial binder members secured to said binder shaft; arched binders extending upward from the outer free ends of said radial members; a crank shaft positioned parallel to said binder shaft; offset portions on said crank shaft contacting said binder members, said shafts being so positioned that the offset portions of the crank shaft will snap past the joining portions of the radial and arched binder members after the latter have reached their closed positions; and a prong member projecting from said binder shaft and positioned to be engaged by an offset portion of said crank shaft when the rotation of the latter is reversed to swing the binders to their open positions.

JOSEPH A. GIBSON.