

W. BOEHNER & BINDERBA,  
 Responsible Printers & Co.

Examined

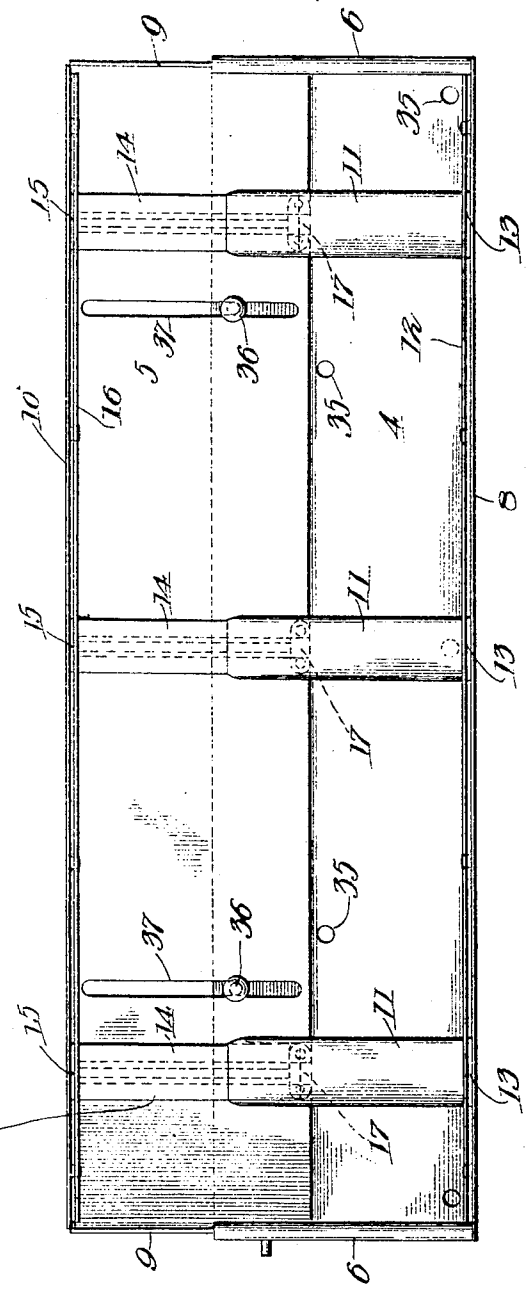
No. 874,919.

PATENTED DEC. 24, 1907.

W. BOEHNER.  
 LOOSE LEAF LEDGER.  
 APPLICATION FILED AUG. 29, 1906.

2 SHEETS—SHEET 1.

*Posts 14 are T-shaped in section  
 with racks formed on the rear edge; see Figs. 5, 6.  
 Fig. 1.*



Witnesses  
*U. L. Sherman*  
*George L. Chindahl*

Inventor  
*William Bohner*  
 By *Luther L. Miller*



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2 SHEETS—SHEET 2.

Fig. 2.

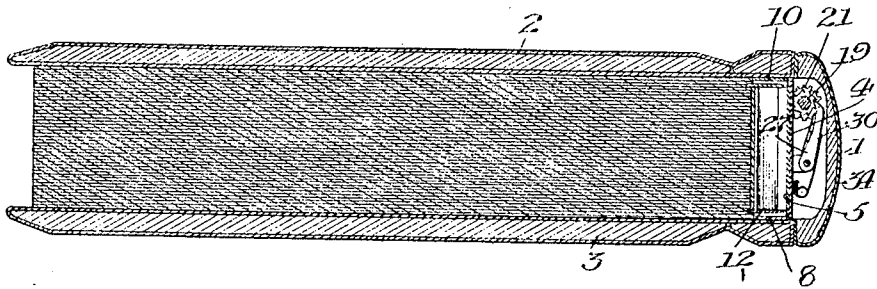


Fig. 3.

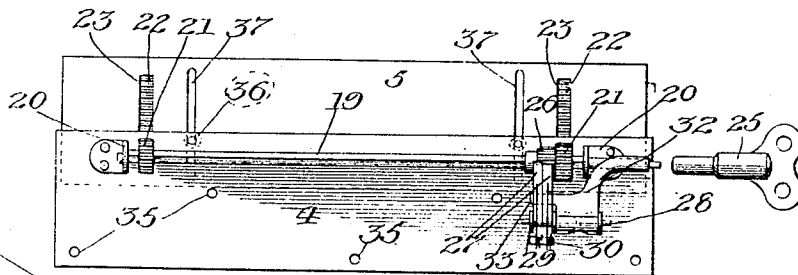


Fig. 4.

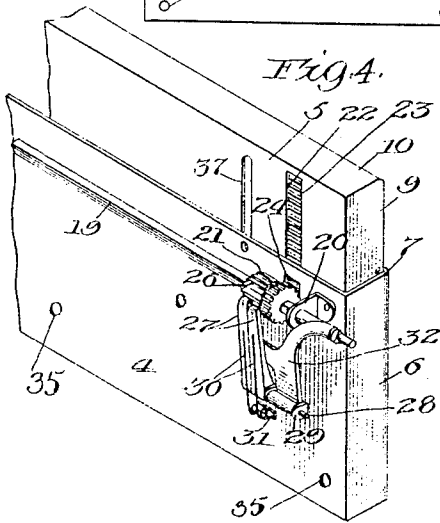


Fig. 6.

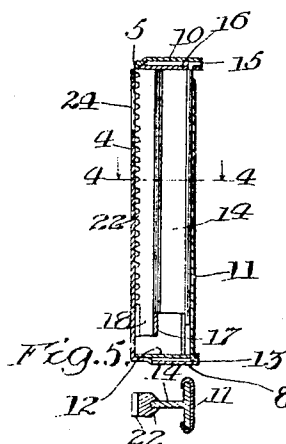


Fig. 5.

Witnesses:  
Geo. L. Chindall  
25 32 21 27 26 19  
6 9 12 14 5 7 15

Inventor

William Bohner  
Luther L. Miller  
atly

# UNITED STATES PATENT OFFICE.

WILLIAM BOEHNER, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO JACOB AHLBERG,  
OF CHICAGO, ILLINOIS:

## LOOSE-LEAF LEDGER.

No. 874,919.

Specification of Letters Patent.

Patented Dec. 24, 1907.

Application filed August 29, 1906. Serial No. 332,443.

*To all whom it may concern:*

Be it known that I, WILLIAM BOEHNER, a citizen of the United States, residing at Chicago, in the county of Cook, and State of Illinois, have invented certain new and useful Improvements in Loose-Leaf Ledgers, of which the following is a specification.

One of the objects of this invention is to improve the means for clamping leaves or sheets in loose-leaf ledgers and similar temporary binders.

Another object of the invention is the production of improved means for operating the leaf-clamping devices.

A further object is the provision, in a loose-leaf ledger, of an automatically-operated lock for preventing the unauthorized operation of the clamping devices.

The invention also relates to the other improvement in loose-leaf ledgers hereinafter set forth.

In the accompanying drawings Figure 1 is a front or top plan view of the binder or back of a loose-leaf ledger embodying the features of my invention. Fig. 2 is a transverse section through the ledger. Fig. 3 is a rear side view of the operating mechanism of the ledger. Fig. 4 is a perspective view of portion of said mechanism. Fig. 5 is a transverse section through one of the leaf-holding posts. Fig. 6 is a side elevation of said leaf holding post and the rack bar associated therewith. Fig. 7 is a detail view of the pawl and ratchet lock for the operating shaft.

The embodiment herein shown of my invention comprises a back 1 and the covers 2 and 3, said back containing and supporting the devices for securing the leaves in the ledger. The supporting framework of said leaf-securing means consists, in this instance, of two plates 4 and 5, the plate 4 having upturned end flanges 6, the upper edges of which flanges are folded inwardly to provide guide grooves 7. Said plate 4 also has along its outer edge a longitudinal flange 8. End flanges 9 upon the plate 5 are adapted to fit within the end flanges 6 upon the plate 4 and to slide in the guide grooves 7. The plate 5 is provided with a longitudinal flange 10 at its outer side.

The leaf-holding devices comprise a plurality of channel pieces 11 secured to a strip 12 lying beside and riveted to the end flange 8 of the plate 4. In this instance, the chan-

nel pieces 11 are secured to the strip 12 by means of angular tongues 13 on said channel pieces extending through openings in said strip, said tongues and the adjacent end of the channel piece being soldered or otherwise fastened to the strip 12. To the plate 5 are secured posts 14 T-shape in cross-section as shown in Fig. 5, the T-head of each post sliding within one of the channel pieces 11. Each post 14, in the present instance, is fixed with relation to the plate 5 by means of an angular tongue 15 on said post extending through an opening in a strip 16 riveted to the inner side of the flange 10. The forward end of the post 14 is secured to the plate 5 by means of a loop 17 secured to said plate and extending over the toe 18 of said post. The leaves intended for use with this ledger are provided in one edge with T-shape slots in order to permit of slipping the slotted edge of said sheets over the channel pieces 11 and the posts 14.

The means for sliding the plates 4 and 5 to move the flanges 8 and 10 toward and away from each other and thus to clamp and release the leaves of the ledger comprises a shaft 19 rotatably mounted in bearing lugs 20 secured to the under side of the plate 4. The shaft 19 consists of a rod which is angular in cross-section, said rod being made cylindrical at its ends to form journals adapted to enter the bearing lugs 20. Upon said shaft are fixed two pinions 21 adapted to mesh with rack teeth 22 formed upon the lower edges of the two end posts 14. The pinions 21 have openings there through conforming to the cross-sectional form of the shaft 19, and they are fixed to said shaft by forcing them upon the angular portion thereof. Slots 23 are formed in the plate 5 beneath said rack teeth, and openings 24 are formed in the plate 4, through which openings the pinions 21 extend into engagement with the racks 22. One end of the shaft 19 is made angular for engagement by the key 25, by means of which key said shaft may be rotated to move the flanges 8 and 10 toward and away from each other.

In order to prevent the opening of the binder except by use of the key 25, I provide a locking device comprising a ratchet wheel 26 fixed upon the shaft 19, with which ratchet two pawls 27 are adapted to engage, said pawls being mounted upon a pivot pin 28 supported in ears 29 struck up from the

plate 4. The point of one of the pawls 27 lies in advance of the other a distance equal to about one-half the width of one of the teeth of the ratchet wheel 26, in order that one of said pawls may always lie directly behind one of said teeth, and thus prevent back-lash or lost motion. Springs 30 secured to the plate 4 in any suitable manner, as by means of the cleat 31 tend to hold the pawls 27 in engagement with the ratchet wheel 26. An arm 32 pivotally mounted upon the pivot pin 28 and having a portion 33 overlying the pawls 27 is adapted to withdraw said pawls from engagement with the teeth of the ratchet wheel 26, said arm extending to a point close to the angular end of the shaft 19, from which position it will, by insertion of the key 25, be moved a sufficient distance to withdraw the pawls 27 from engagement with said ratchet wheel.

The mechanism upon the rear side of the plate 4 is covered by a backing 34 attached to the rear side of said plate by means of screws passing through openings 35 in said plate into said backing. The separating movement of the flanges 8 and 10 is limited by means of stop screws 36 extending through elongated slots 37 in the plate 5 and through openings in the plate 4 into the backing 34. The attaching portions of the covers 2 and 3 are screwed or otherwise suitably secured to the flanges 8 and 10 of the plates 4 and 5.

In use, the leaves are engaged with the channel pieces 11 and the posts 14 by slipping the notched ends of said leaves over said posts. The binder back 1 is then contracted to clamp the leaves between the flanges 8 and 10 by pressing the sides of said back together, such movement not being interfered with by the pawl and ratchet lock hereinbefore described. A suitable degree of pressure upon the leaves is obtained by rotating the shaft 19 by means of the key 25. When it is desired to change the arrangement of the leaves in the ledger, the back 1 is expanded by rotating the shaft 19 by means of the key 25, the engagement of said key with said shaft moving the arm 32 a sufficient distance to withdraw the locking pawls 27 from the teeth of the ratchet wheel 26. The stop screws 36 limit the expanding movement of the back 1 before the channel pieces 11 and the posts 14 become disengaged, said channel pieces and posts forming at all times continuous leaf-holding devices extending from side to side of the back 1.

It will be noted that this binder is relatively thin or flat. This result is obtained by placing the leaf-holding members relatively near the plates 4 and 5, and by utilizing portions of said leaf-holding members for the operating means.

It is obvious that the embodiment hereinbefore described may be altered in various

ways without departing from the spirit and scope of my invention.

While I have hereinbefore described this invention as embodied in a loose-leaf ledger, it is apparent that certain features of said invention are applicable to temporary binders of various classes.

I claim as my invention:

1. In a binder, in combination, two back members; means for moving said back members with relation to each other comprising a rotatable element; a ratchet wheel arranged to move with said rotatable element; two independently movable pawls adapted to engage said ratchet wheel, said rotatable element being adapted for rotation by means of a key; and an arm adapted to engage said pawls and extending to a point adjacent to said rotatable element and in position to be engaged and moved by said key.

2. In a binder, in combination, two plates each provided upon its forward side with a longitudinal side flange; leaf-holding means secured to said longitudinal side flanges; and means located upon the rear side of said plates for moving said plates toward and away from each other.

3. In a binder, in combination, two plates each provided with a longitudinal side flange upon its forward side; leaf-holding members secured to said side flanges, one of said leaf-holding members having rack teeth formed thereon; a pinion rotatably mounted upon the rear side of one of said plates, and adapted to mesh with said rack teeth; and means for rotating said pinion.

4. In a binder, in combination, two flat plates arranged to slide one upon the other; leaf-holding means secured to said plates upon one side thereof; and means upon the other side of said plates for moving said plates toward and away from each other.

5. In a binder, in combination, two plates arranged to slide one upon the other; leaf-holding members fixed with relation to said plates upon one side thereof, one of said members having rack teeth formed upon its lower side; a pinion mounted upon the rear side of one of said plates, and adapted to mesh with said rack teeth; and means for rotating said pinion.

6. In a binder, in combination, two plates arranged to slide one upon the other; leaf-holding means fixed with relation to said plates upon one side thereof, one of said members extending in close proximity to one of said plates, and said plate having an opening therethrough adjacent to said leaf-holding member, said member having rack teeth formed upon its side adjacent to said opening; a pinion mounted upon the rear side of the other plate and adapted to mesh with said rack teeth; and means for rotating said pinion.

7. In a binder, in combination, two back

members each comprising a plate having a longitudinal side flange upon its forward side; a leaf-holding post fixed to the side flange of one of said back members the lower side of said post lying close to the plate comprised in said back member; rack teeth formed upon the lower side of said leaf-holding post; a cooperating leaf-holding member fixed with relation to the other back member; a pinion carried upon the rear side of said last-mentioned back member and adapted to engage said rack teeth; and means for rotating said pinion.

8. In a binder, in combination, two back members; a leaf-holding channel piece fixed with relation to one of said back members upon its forward side; a leaf-holding post fixed with relation to the other back mem-

ber upon its forward side, said post being T-shape in cross-section and being adapted to have a sliding engagement with said channel piece, said post extending close to the plate comprised in its back member, and an opening being formed in said plate adjacent to said post; rack teeth formed upon the edge of said post adjacent to said opening; a pinion rotatably mounted upon the rear side of the plate comprised in the other back member, said pinion being arranged to mesh with said rack teeth; and means for rotating said pinion.

WILLIAM BOEHNER.

Witnesses:

GEORGE L. CHINDAHL,  
JACOB AHLBERG