No. 868,239. PATENTED OCT. 15, 1907.

R. B. WILSON.

LOOSE LEAF BINDER.

APPLICATION FILED APR. 4, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

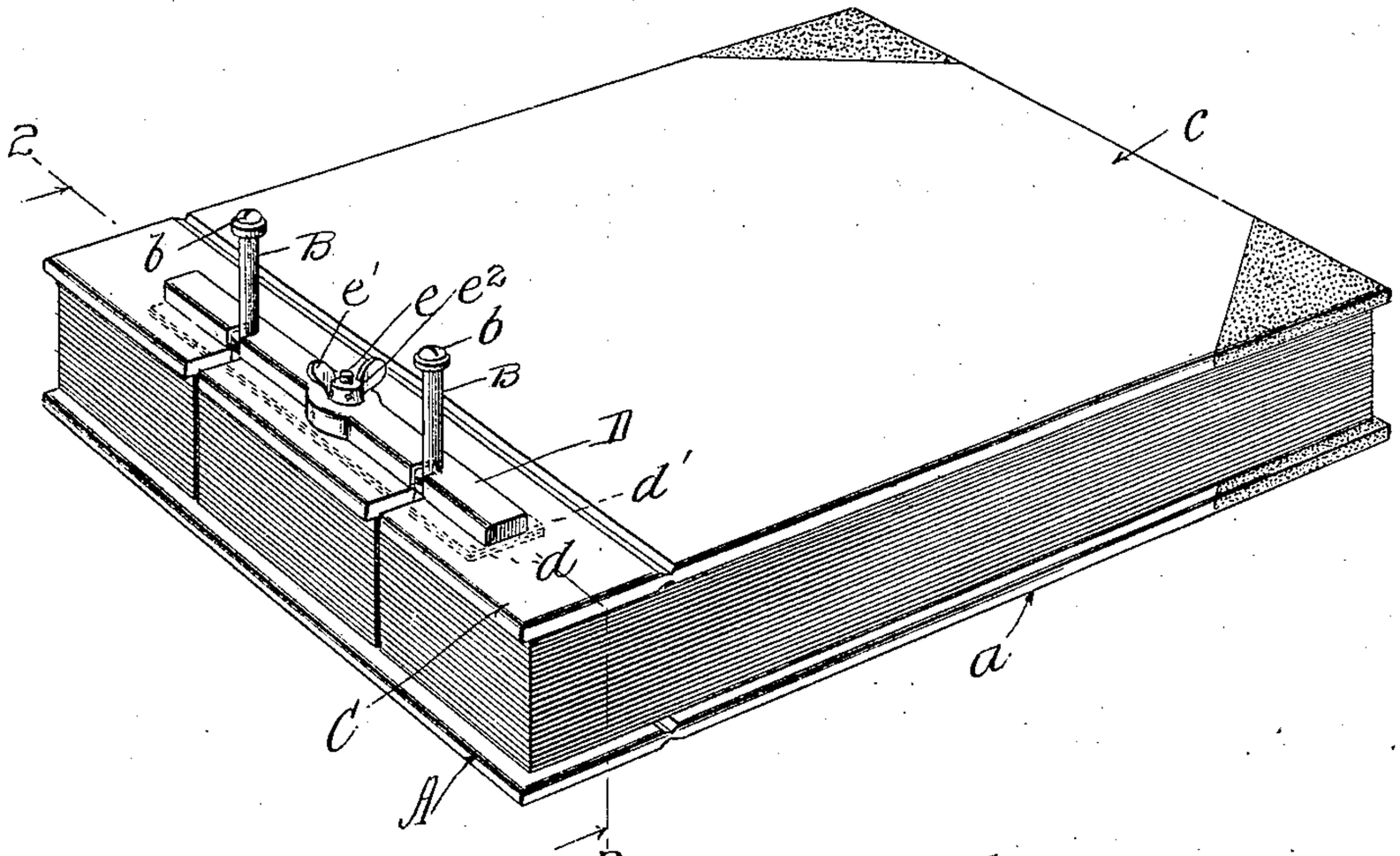


Fig. 2.

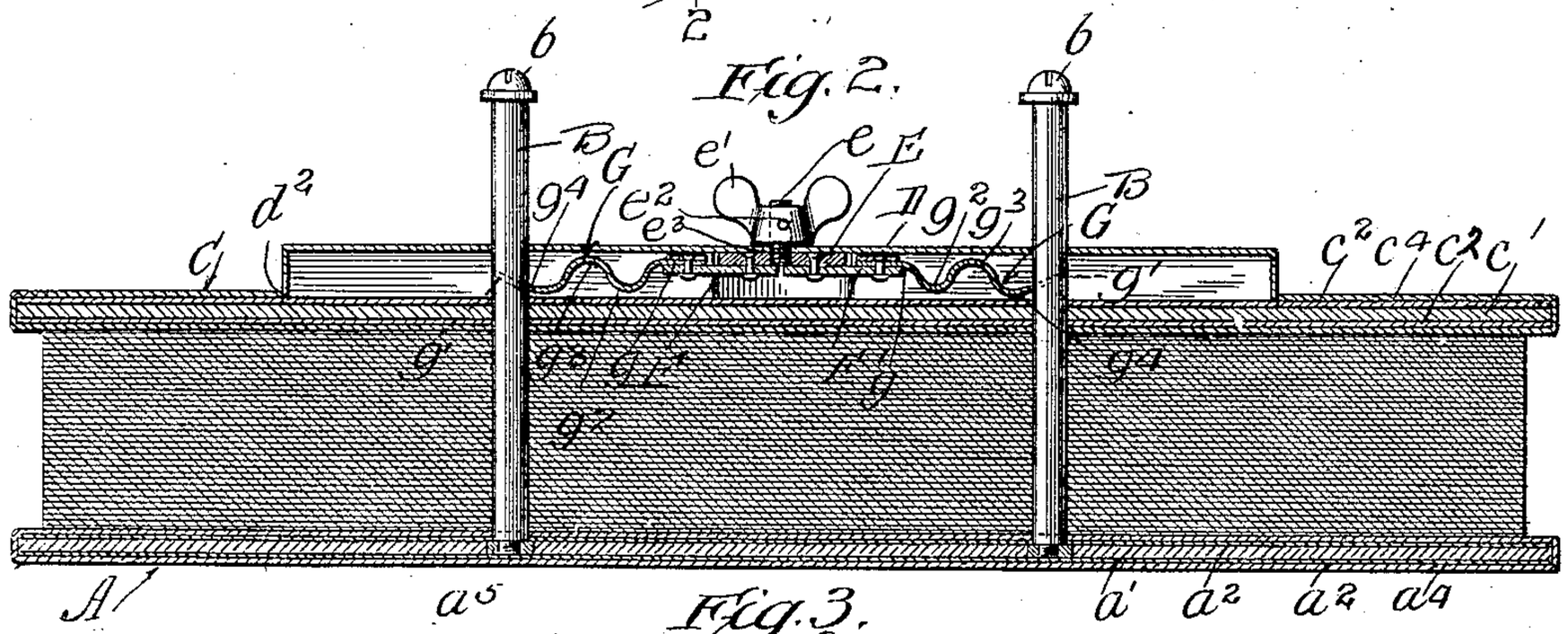
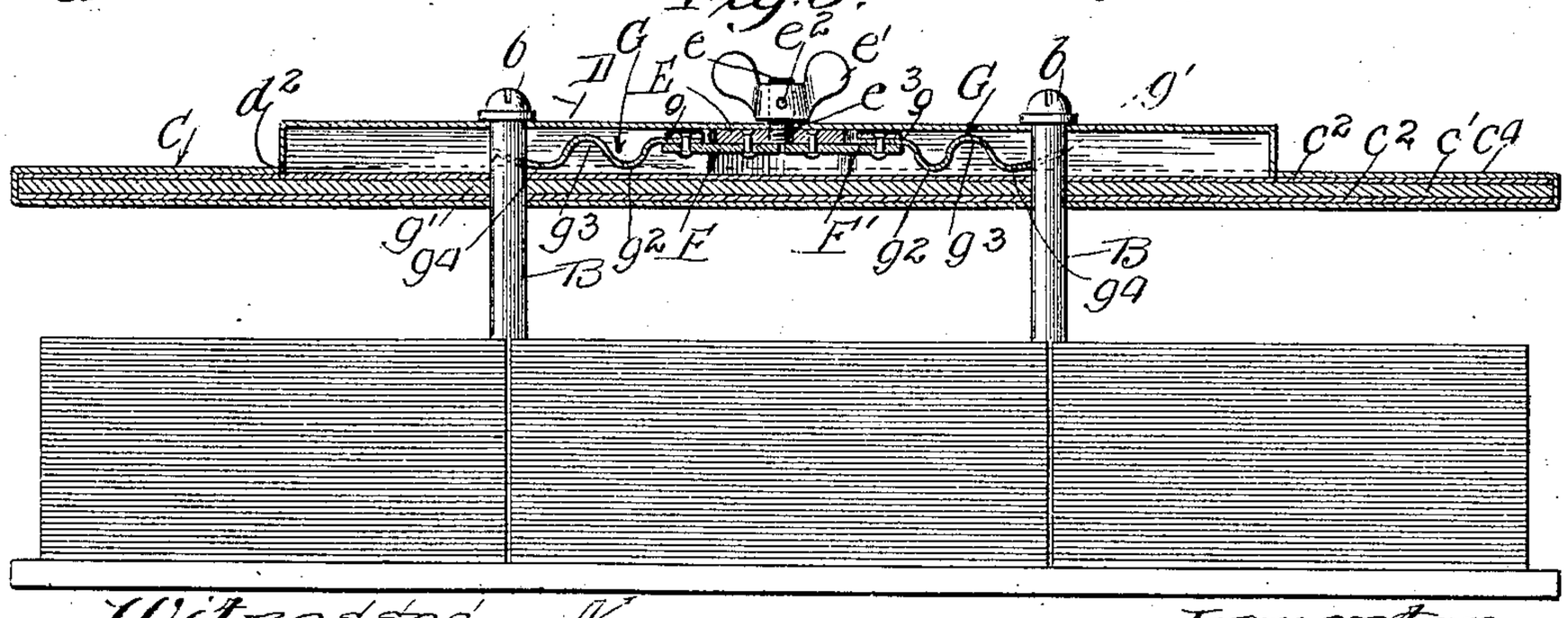


Fig. 3.



Witnesses
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2 SHEETS—SHEET 2.

Fig. 4.

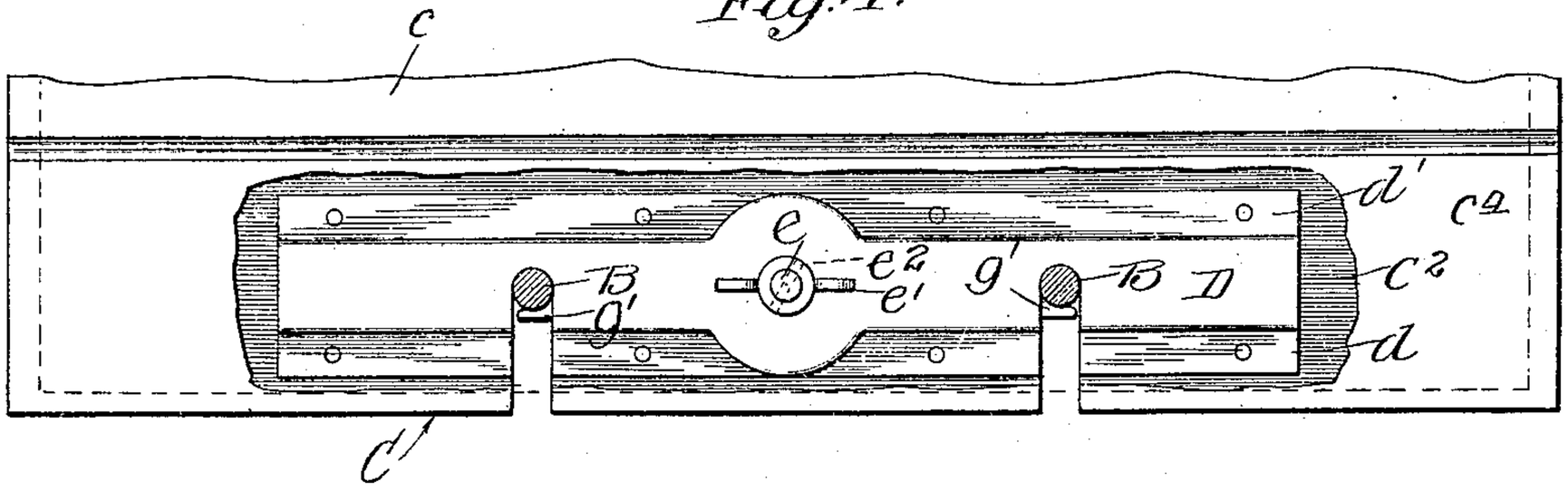


Fig. 5.

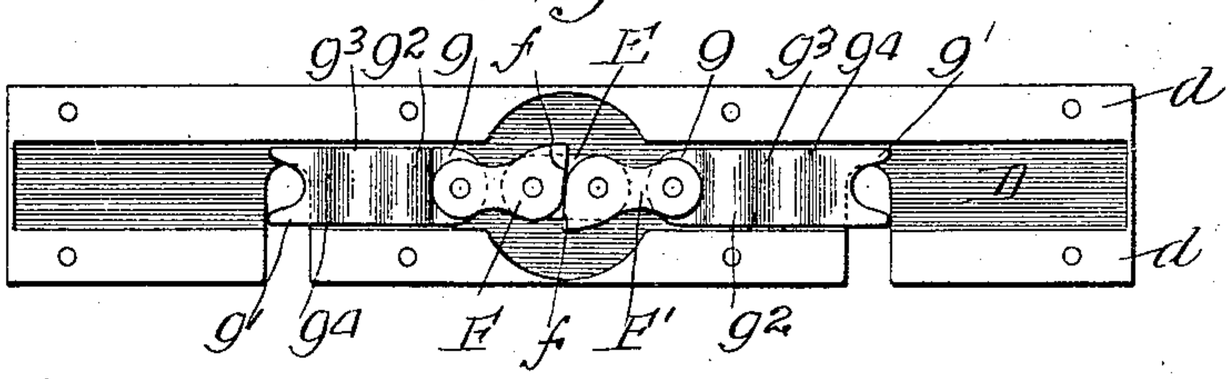


Fig. 6.

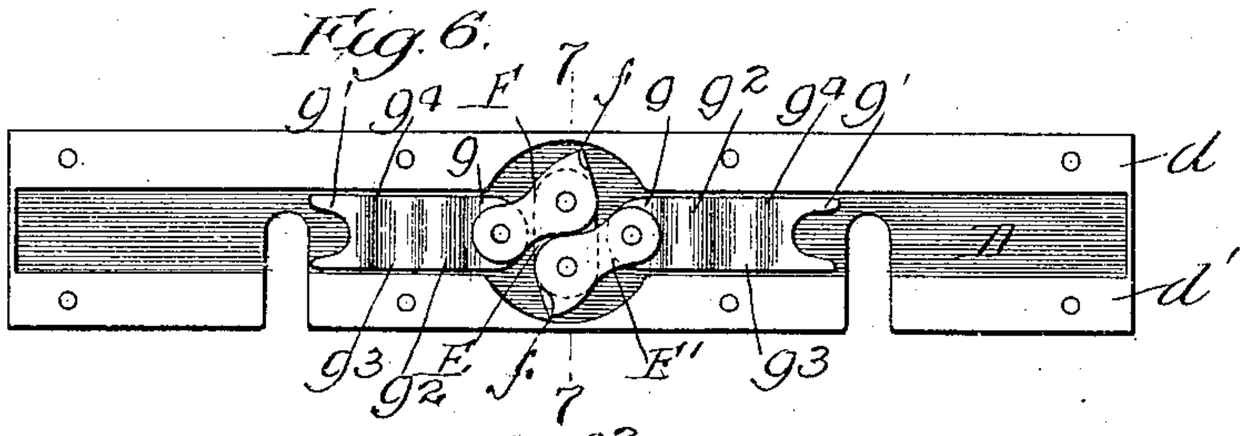


Fig. 7.

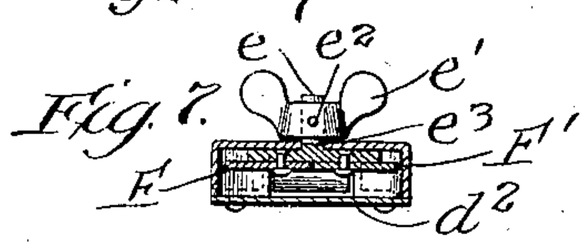


Fig. 8.

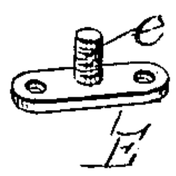
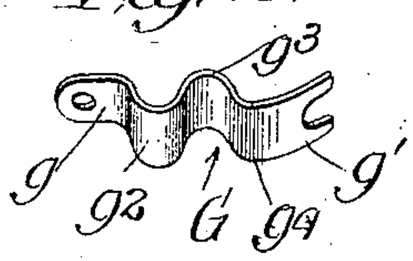


Fig. 9.

Fig. 10.



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Atty.

UNITED STATES PATENT OFFICE.

RALPH B. WILSON, OF CHICAGO, ILLINOIS.

LOOSE-LEAF BINDER.

No. 868,239. Specification of Letters Patent. Patented Oct. 15, 1907

Application filed April 4, 1907. Serial No. 366,449.

To all whom it may concern:

Be it known that I, RALPH B. WILSON, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Loose-Leaf Binders; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in loose leaf binders and of that class in which a plurality of rigid impaling posts are engaged to a lower binding plate, and on which an upper clamping plate is engaged by means of a suitable lock.

It is an object of this invention to provide a device of the class specified in which the locking bolts are positively extended and retracted to and from the impaling posts and in which the use of a separate key is avoided.

It is a further object of this invention to provide resilient bolts for engagement with the posts which act to lock the clamping plate in any adjustment and which jam tightly against the impaling posts when upward pressure is exerted on the clamping plate but yield readily to downward pressure thereby adapting the clamping plate to be adjusted toward the binding plate to more firmly grip the sheets therebetween when the bolts are in locking position thus permittting the most precise and delicate inward adjustment without the necessity of unlocking and locking the binder a plurality of times and which positively prevents the clamping plate from moving away from the binding plate under inward pressure.

It is also an object of this invention to provide means to automatically secure or lock the bolts against retraction when pressure is exerted at the ends thereof, in effecting the adjustment of the binder.

It is a further object of this invention to provide an exceedingly durable device, instantaneous in operation, cheap to manufacture and simple in construction, capable of being knocked down and nested in shipping.

The invention consists in the matters hereinafter described and more fully pointed out and defined in the appended claims.

On the drawings: Figure 1 is a perspective view of a binder provided with a locking device embodying my invention. Fig. 2 is a section on line 2—2 of Fig. 1. Fig. 3 is a longitudinal vertical section of the clamping plate and locking device with the leaves and binding plate in rear elevation. Fig. 4 is a fragmentary top plan view of the binder with part of the clamping plate broken away illustrating the method of securing the casing thereto. Fig. 5 is a bottom view of the casing with the bottom plate removed showing the bolts in locking position. Fig. 6 is a view similar to Fig. 5 with the bolts retracted. Fig. 7 is a section of line 7—7 of Fig. 6. Fig. 8 is a perspective view of the actuating link. Fig. 9 is a perspective view of one of the toggle arms. Fig. 10 is a perspective view of one of the resilient bolts.

As shown in the drawings: A represents the binding plate to which a forwardly directed lower cover a is secured. Said binding plate, as shown, comprises a central plate a' of metal or other suitable material and an investing covering of canvas a^2, which is secured thereon and a finishing covering a^4, of leather or other suitable material is secured as usual. Threaded apertured nipples a^5 are rigidly secured in suitable apertures in the plate a' or if preferred the impaling posts B to any desired number and height may be threaded directly into the binding plate.

The clamping plate C is provided with a forwardly extending upper cover c similar to the lower cover and, as shown, said plate comprises a center plate c' of metal or other suitable material and an investing canvas cover c^2 around which the finishing covering c^4 of leather or other suitable material is drawn. The clamping plate is provided with notches corresponding with the number of posts and which extend from approximately the center of the plate and open through the rear thereof.

Rigidly engaged to the clamping plate C in any suitable manner is a downwardly opening casing D, of pressed metal having outwardly extending flanges d—d' integral with the bottom thereof. A covering plate d^2, closes the bottom of said casing and is of a width and length to extend flush with the end and sides of the flanges and is firmly riveted or otherwise permanently secured thereto. Said flanges d—d' and plate d^2 are riveted to the clamping plate C.

The central part of the casing D is enlarged to afford a circular chamber and rotatably engaged therein is a link E, having an upwardly directed threaded shaft e, rigidly engaged thereto, which extends through a central aperture in the top of the casing. A wing nut e', for manual actuation is threaded thereon and is held from movement relatively the shaft e by a pin e^2 extending through apertures in said nut and shaft.

Pivoted on opposite ends of said link E are toggle arms F—F′ each of which is provided with a rounded outer end and the inner end shaped to afford a long locking face f which when the levers are extended abut against each other and lock the arms from relative movement when pressure is exerted at the ends of the bolts. Said toggle arms are complementally rounded to permit free movement of the arms when link E is actuated as shown in Fig. 7. Pivotally engaged to the outer end of each toggle arm is a resilient bolt G each of which comprises a bar of metal provided with a straight

end g, for engagement with its toggle arm and an upwardly curved outer end g' provided with a rounded slot to receive the impaling posts B. Said bar between its ends is provided with a plurality of bends g^2—g^3—g^4, which affords great strength and resiliency.

The operation is as follows: The sheets desired to be secured in the ledger are engaged on the impaling posts B (said sheets usually having slits extending from the post apertures to the rear margin) for quick insertion and removal. The clamping plate C is then inserted on the impaling posts. The impaling posts fit loosely in said notches which inasmuch as they extend through the rear edges of the clamping plates afford greater facility in assembling than if the clamping plate was simply apertured, in which case the cap or button b on each post would first have to be removed. When the clamping plate has been forced downwardly to bind the sheets to what is deemed sufficient for best working facility the nut e' is actuated throwing the toggle arms to extend the resilient bolts to engage the corresp nding impaling post, in which position the flat faces of the toggle levers abut one against the other and the pivots are in alinement thus locking the clamping plate from upward movement, except when the link E is again rotated. This is of great importance for, if the sheets are not bound sufficiently tight for convenient working, it is simply necessary to exert a pressure upon the clamping plate, which will then bind the sheets closer. Owing to the upward direction of the resilient ends of the bolts they yield upwardly and slide along the impaling posts. Said bolts cannot move longitudinally for pressure is exerted at the dead center of said toggle arms and when the right binding pressure is obtained the ledger is locked whereas in devices as heretofore constructed it is necessary when the proper binding adjustment is not obtained by the first adjustment to retract the locking arms causing considerable waste of time. It is further seen that should upward pressure be exerted on said clamping plate the resilient locking bars instantaneously clamp against and tend to bite into the impaling posts positively preventing upward movement. By this construction quicker and a more exact adjustment can be obtained than heretofore possible for if on the first adjustment the clamping plate is a little loose, it can be forced gently downwardly thereby affording a very exact adjustment.

As shown the screw shaft e^3 is threaded into the link E, in a direction that in locking the binder the same is screwed inwardly in the link. Should it be desired the screw shaft may be unthreaded and the parts thus be packed in very small space.

Many changes may be made and details of construction may be varied without departing from the principles of this invention and I therefore do not desire to limit this application otherwise than necessitated by the prior art.

I claim as my invention:

1. In a loose leaf ledger a binding plate, impaling posts engaged thereto, a clamping plate and resilient bolts carried thereon to engage said posts said resilient bolts having the outer ends directed upwardly to engage the posts.

2. In a device of the class described the combination with a binding and clamping plate, of impaling posts carried by one plate and resilient bolts carried on the other plate to lock said plates in operative relation and comprising a bar provided with a plurality of vertical folds intermediate its ends.

3. In a device of the class the combination with a binding plate and a clamping plate, of impaling posts, a resilient bolt engaged to the clamping plate and adapted to impinge upwardly against the impaling post to lock the same and adapted to yield upwardly permitting adjustment of the plates in locked position and toggle arms for actuating said bolts.

4. A lock for loose leaf ledgers comprising a casing, oppositely movable resilient bolts therein, toggle arms adapted to actuate said bolts having mutually interfitting faces to automatically lock against longitudinal pressure.

5. A lock for loose leaf ledgers comprising a clamping plate resilient bolts thereon, having slotted extremities to receive impaling posts, and means having cam faces adapted to abut one against the other and to positively actuate the bolts and to lock said clamping plate and impaling posts from relative movement in one direction.

6. In a device of the class described the combination with an elongated casing of oppositely movable bolts therein, each provided with vertical folds affording resiliency and having the outer ends directed upwardly to engage the posts, an arm pivoted to each, a link pivotally connecting the inner ends of said arms, a shaft extending upwardly from said link through the casing and means for actuating said shaft.

7. A lock comprising resilient locking bars having a plurality of vertical folds adapted to permit adjustment in one direction when in locking position and positively preventing movement in the opposite direction and oscillating means for extending and retracting said bars.

8. The combination with a binding plate of impaling posts secured thereto, a clamping plate, a casing or housing secured thereto, said clamping plate and casing slotted to receive the impaling posts, oppositely movable bolts in said casing having the ends directed to contact the posts at an angle to the horizontal, means actuating the bolts adapted to positively extend and retract the same and to prevent movement of the bolts when longitudinal pressure is exerted at the ends thereof.

9. A lock of the class described comprising simultaneously and oppositely movable resilient bolts adapted to contact and engage impaling posts at an angle with the horizontal and means actuating said bolts.

10. The combination with a binding and a clamping plate of impaling posts engaged to one of said plates, oppositely movable resilient bolts, adapted to yield horizontally and to yield vertically in one direction when in locking position, toggle arms for actuating said bolts and means pivotally engaged to the toggle arms for manual actuation.

11. A locking device comprising a housing, resilient locking bolts therein each adapted to contact an impaling post at an angle to the horizontal, toggle levers, one pivoted to each bolt having cam faces adapted to lock the same when extended against longitudinal pressure on the bolts and means for actuating the toggle levers to extend and retract the bolts.

12. A locking device for binders comprising a casing having slots extending from approximately centrally thereof to the margins adapted to receive impaling posts therein, locking bolts in the housing, levers pivoted at one end of the same, a link having pivotal connection with the locking bolts, an integral threaded shaft extending upwardly therefrom through the top of the casing, a wing nut threaded thereon for manual actuation and a pin extending through said nut and shaft rigidly but removably securing the same in position.

13. A lock for the purposes specified comprising locking bolts having an attaching end and a notched end for engaging impaling posts, said bolts having folds directed at an angle with the horizontal intermediate the ends affording resiliency and means for extending the bolts to contact the posts and to retract the same.

14. A lock for the purpose specified comprising a casing slotted from approximately its center to one margin to receive the impaling posts, locking bolts therein adapted to

lock against impaling posts, each having folds therein directed at an angle with the horizontal a link in the casing, a shaft secured thereto and extending upwardly therefrom through an aperture in said casing, means connecting the locking bolts and the link provided with interfitting locking-faces and removable means rigidly secured on the shaft outside the casing for actuating the locking bolts.

15. A locking device for the purpose specified embracing locking bars having folds or bends therein directed at an angle with the horizontal, toggle arms engaged to the bolts and means secured to said arms for actuating the same.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

RALPH B. WILSON.

Witnesses:
J. W. ANGELL,
K. E. HANNAH.