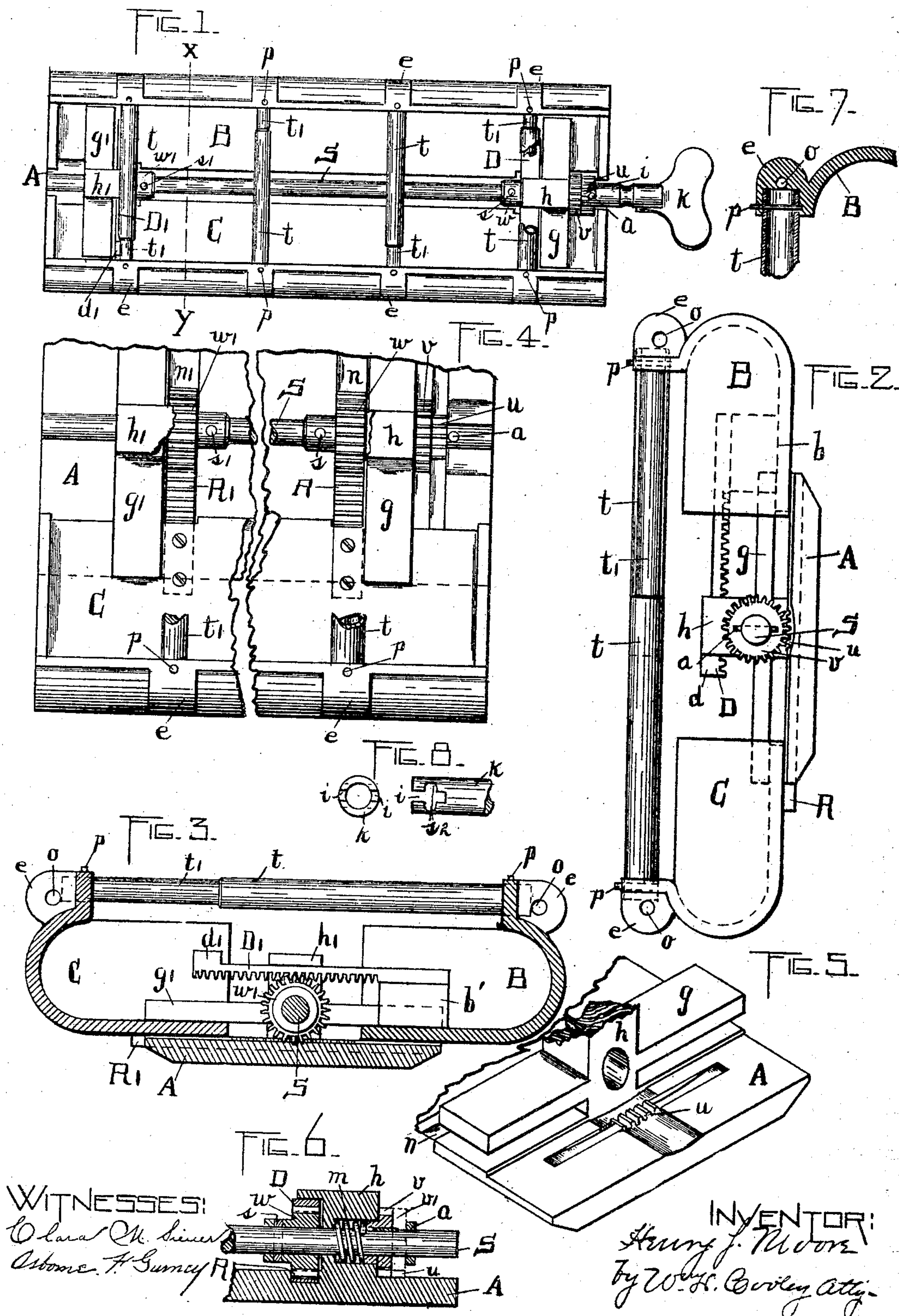


No. 795,640.

PATENTED JULY 25, 1905.

H. J. MOORE.
LOOSE LEAF BINDER.
APPLICATION FILED AUG. 25, 1904.



WITNESSES:

Charles H. Sinner

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UNITED STATES PATENT OFFICE.

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LOOSE-LEAF BINDER.

No. 795,640

Specification of Letters Patent.

Patented July 25, 1905.

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To all whom it may concern:

Be it known that I, HENRY J. MOORE, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented a new and Improved Loose-Leaf Binder, of which the following is a specification.

This invention relates to that class of loose-leaf binders in which are combined the following elements, viz.: a back-plate with two side or cover plates, each one hinged to one of the cover-leaves and with these side plates arranged to be moved to and from each other in suitable guides upon the back-plate and with the back-plate also carrying suitable mechanism for moving these side plates to and from each other and locking them in any desired position of adjustment relatively to each other and to the back-plate, while from these side plates there are arranged to project inwardly alternating male and female impaling-pins with a male member on one side plate opposite a corresponding female member on the other side plate.

My invention consists in a modified arrangement of the parts to a binder such as above described and in combining with the guiding mechanism between the side plates and the back-plate a rack for engaging a suitable operating-pinion, and, further, in an improved locking mechanism whereby by the insertion of the operating-key the mechanism for locking the side plates in any position of adjustment is released, so that by means of such operating-key such side or cover plates may be adjusted to and from each other, as desired, when upon the withdrawal of the operating-key the locking mechanism again assumes its operative position.

A still further feature of my present invention consists in the location of the impaling posts or pins, both male and female, directly opposite the ears or lugs constituting parts of the hinges for securing the cover-plates to the cover-leaves. On account of this last feature of my invention I am enabled to make my side plates much lighter than would otherwise be the case, while at the same time securing a greater degree of rigidity for the impaling-pins on account of the greater depth of the holes into which they may be forced and secured on the side plates, as they may extend inwardly nearly or quite to the pintle of the hinges between the cover-plates and the cov-

ers—that is, they may extend into the lugs or ears as far as possible and not show through the ears or lugs. This is an important point, as the weakest feature in most loose-leaf binders is the support for the impaling-pins.

A preferable form of my loose-leaf binder is illustrated in the accompanying drawings, which show only the back-frame of a binder, to which there may be attached any preferable style of cover-leaves.

The drawings are as follows: Figure 1 is a plan view of my back-frame, while Fig. 2 is an end view of the same opened out, as seen from the right. Fig. 3 is a vertical sectional view of my binder-frame, taken along the dotted line *x y* of Fig. 1, with all parts to the right of such line removed. Fig. 4 is a plan view of a portion of the two extreme ends of my binder-frame with the middle portion shown as broken away. Fig. 5 is a perspective of the right-hand end, as seen in Fig. 1, of the back plate removed from the binder-frame. Fig. 6 is a vertical central sectional view of the extreme right-hand end, as seen in Fig. 1, of the back plate and shows the bearings for the operating-rod and the parts immediately connected therewith, as will be explained, showing also the locking mechanism in sectional view. Fig. 7 shows a portion of one of the cover-plates in transverse sectional view and illustrates the method of securing the impaling-posts in such cover-plates. Fig. 8 shows, to the left in end view and to the right in side view, the inner end of the operating-key to my binder-frame.

Similar letters refer to similar parts throughout the several views.

Referring to the drawings, my binder-frame consists of cover-plates B and C, working in suitable guides, as will be explained, upon the back-plate A. This back-plate A has near its right and left hand ends the laterally-extending members *g* and *g'*, respectively, supported a short distance above the back-plate A and between which and the inner surface of the back-plate proper the lower and horizontally-disposed members of the cover-plates B and C are arranged to slide and by which such cover-plates are also properly held in their normal plane parallel with the back-plate A when in any desired position of adjustment to or from each other. In these members *g* and *g'* there are seen holes, which constitute the bearings for the operat-

ing-shaft S, upon which there are seen two pinions w and w' , secured on the shaft S by means of the pins s and s' , respectively. These pinions w and w' are arranged to engage, respectively, racks D and D' on their upper sides, such racks D and D' being secured to the lower horizontal member of the cover-plate B by means of the upwardly-projecting blocks b and b' , respectively, secured to these racks D and D' and secured in turn also to the back-plate A.

The back-plate A is grooved on its upper surface, as seen at n and n' in Fig. 4 and as indicated in dotted line in Figs. 2 and 3. In these grooves n and n' there are arranged to slide, respectively, the racks R and R', having teeth on their upper surface for engagement with the lower sides, respectively, of the pinions w and w' . The racks R and R' are secured to the under side of the horizontal member of the cover-plate C and constitute, with the grooves n and n' , respectively, in the back-plate A the guiding mechanism for the cover-plate C in its movement back and forth upon the back-plate A. The plates h and h' , respectively secured to the members g and g' , are arranged to engage the upper surfaces of the rack-bars D and D', respectively, and constitute, therefore, with such guide-bars, guiding mechanism for the movement of the cover-plate B back and forth upon back-plate A. The free ends of these racks D and D' respectively carry projections at d and d' , which prevent the outward movement of the cover-plate B upon the back-plate A beyond a predetermined and proper limit, as will at once be understood.

The right-hand end, as seen in Fig. 1, of the shaft S has inserted therethrough a pin a for engaging the notches seen in Figs. 1 and 8 on the inner end of the operating-key K, whereby such key K is enabled to carry the shaft S with it, so as to turn the pinions w and w' therewith, and thus move the cover-plates B and C to and from each other, as desired. The vertically-disposed and central portion of the member g is counterbored part way through, as indicated in Fig. 6, to receive the spring m , normally operating to force the gear wheel or pinion v to the right, as indicated in dotted line in Fig. 6 at v' , in which position it is in engagement with the locking-rack u , cut in the right-hand end of the back-plate A. This gear wheel or pinion v is splined upon the rod or shaft S in any suitable way, (not shown,) so as to permit of longitudinal movement upon such shaft S. The outward movement to the right of this pinion v is limited by the pin a , seen in the right-hand end of the shaft S. It will be readily understood, then, that by the insertion of the key K over the end of the shaft S and in such a way as to force the pinion v to the left and permit of the engagement of the

notches i in the key K engaging with the pin a the shaft S can be turned then by means of the key K, the pinion v having been forced inwardly and out of engagement with the locking-rack u . Each of these cover-plates B and C has formed on its upper edge four ears e , by means of which the cover-leaves proper may be suitably hinged thereto, the opening for the pintles or pins in these ears e being indicated at o in Figs. 2, 3, and 7. Opposite these ears e there are bored holes of suitable size for the insertion therein of the impaling-pins t and t' , which are secured in such holes by means of suitable pins p , as indicated. The cooperating and opposite pins t and t' are arranged, as indicated in Figs. 1, 2, and 3, to telescope one within the other in the usual way, the pins t and t' alternating with each other upon each side of the binder-frame, as indicated.

My binder-frame may be operated in the manner following: When it is desired to move the cover or side plates of my binder relatively to or from each other, the key K is inserted over the end of the shaft S and pushed inwardly, so as to force the pinion v inwardly and out of engagement with the locking-rack u and permit of the engagement of the notches i on the inner end of the key K with the pin a on a shaft S, at which time the key K may be turned in either direction, so as to move the cover-plates B and C to or from each other to any desired positions. It will be noticed that during the operation of the key K it may be held in its desired position on the shaft S by engagement of the pin a with the lateral extensions s^2 of the notches i on the inner end of the key K.

What I claim is—

1. In a loose-leaf binder, cover-plates having impaling-pins secured thereto, a back-plate, mechanism for supporting guiding and operating such cover-plates toward and from each other on such back-plate comprising racks secured to such cover-plates and a shaft working in bearings on such back-plate and carrying pinions for engaging such racks and means for locking such shaft against rotation at any desired point, such means comprising a locking-gear on such shaft and a locking-rack for engaging such locking-gear, one of such elements of locking-rack and locking-gear movable relatively to and out of operative relation with the other, a spring operating to hold such locking elements in locking engagement, an operating-head on such shaft adapted to be engaged by an operating-key and the movable one of such elements of locking-gear and locking-rack adapted to be forced out of engagement with the other by the operating-key when in engagement with such operating-head.

2. In a loose-leaf binder, cover-plates having impaling-pins secured thereto, a back-

plate, mechanism for supporting guiding and operating such cover-plates toward and from each other on such back-plate comprising a rack secured to each of such cover-plates and a shaft working in bearings on such back-plate and carrying a pinion for engaging each of such racks and means for locking such shaft against rotation at any desired point, such means comprising a locking-gear on such shaft and a locking-rack for engaging such locking-gear, one of such elements of locking-rack and locking-gear movable relatively to and out of operative relation with the other, a spring operating to hold such locking elements in locking engagement, an operating-head on such shaft adapted to be engaged by an operating-key and the movable one of such elements of locking-gear and locking-rack adapted to be forced out of engagement with the other by the operating-key when in engagement with such operating-head.

3. In a loose-leaf binder, cover-plates having impaling-pins secured thereto, a back-plate, mechanism for supporting guiding and operating such cover-plates toward and from each other on such back-plate comprising racks secured to each of such cover-plates and a shaft working in bearings on such back-plate and carrying pinions for engaging such racks and means for locking such shaft against rotation at any desired point, such means comprising a locking-gear on such shaft and a locking-rack for engaging such locking-gear, one of such elements of locking-rack and locking-gear movable relatively to and out of operative relation with the other, a spring operating to hold such locking elements in locking engagement, an operating-head on such shaft adapted to be engaged by an operating-key and the movable one of such elements of locking-gear and locking-rack adapted to be forced out of engagement with the other by the operating-key when in engagement with such operating-head.

4. In a loose-leaf binder, a cover-plate having an impaling-pin or impaling-pins secured thereto, a back-plate, mechanism for supporting guiding and operating such cover-plate on such back-plate comprising racks secured to such cover-plate and a shaft working in bearings on such back-plate and carrying pinions for engaging such racks and means for locking such shaft against rotation at any desired point, such means comprising a locking-gear on such shaft and a locking-rack for engaging such locking-gear, one of such elements of locking-rack and locking-gear movable relatively to and out of operative relation with the other, a spring operating to hold such locking elements in locking engagement, an operating-head on such shaft adapted to be engaged by an operating-key and the movable one of such elements of locking-gear and lock-

ing-rack adapted to be forced out of engagement with the other by the operating-key when in engagement with such operating-head.

5. In a loose-leaf binder, a cover-plate having an impaling-pin or impaling-pins secured thereto, a back-plate, mechanism for supporting guiding and operating such cover-plate on such back-plate comprising a rack secured to such cover-plate and a shaft working in bearings on such back-plate and carrying a pinion for engaging such rack and means for locking such shaft against rotation at any desired point, such means comprising a locking-gear on such shaft and a locking-rack for engaging such locking-gear, one of such elements of locking-rack and locking-gear movable relatively to and out of operative relation with the other, a spring operating to hold such locking elements in locking engagement, an operating-head on such shaft adapted to be engaged by an operating-key and the movable one of such elements of locking-gear and locking-rack adapted to be forced out of engagement with the other by the operating-key when in engagement with such operating-head.

6. In a loose-leaf binder, cover-plates having impaling-pins secured thereto, a back-plate, mechanism for supporting guiding and operating such cover-plates toward and from each other on such back-plate comprising racks secured to such cover-plates and a shaft working in bearings on such back-plate and carrying pinions for engaging such racks and means for locking such shaft against rotation at any desired point, such means comprising a locking-gear on such shaft and a fixed locking-rack for engaging such locking-gear, such locking-gear splined on such shaft and movable relatively to and out of operative relation with such locking-rack, a spring operating to hold such locking-gear in engagement with such locking-rack, an operating-head on such shaft adapted to be engaged by an operating-key and such locking-gear adapted to be forced out of engagement with such locking-rack by the operating-key when in engagement with such operating-head.

7. In a loose-leaf binder, cover-plates having impaling-pins secured thereto, a back-plate, mechanism for supporting guiding and operating such cover-plates toward and from each other on such back-plate comprising a rack secured to each of such cover-plates and a shaft working in bearings on such back-plate and carrying a pinion for engaging each of such racks and means for locking such shaft against rotation at any desired point, such means comprising a locking-gear on such shaft and a fixed locking-rack for engaging such locking-gear, such locking-gear splined on such shaft and movable relatively to and out of operative relation with such locking-rack, a spring operating to hold such locking-gear in engagement with such locking-rack, an op-

erating-head on such shaft adapted to be engaged by an operating-key and such locking-gear adapted to be forced out of engagement with such locking-rack by the operating-key when in engagement with such operating-head.

8. In a loose-leaf binder, cover-plates having impaling-pins secured thereto, a back-plate, mechanism for supporting guiding and operating such cover-plates toward and from each other on such back-plate comprising racks secured to each of such cover-plates and a shaft working in bearings on such back-plate and carrying pinions for engaging such racks and means for locking such shaft against rotation at any desired point, such means comprising a locking-gear on such shaft and a fixed locking-rack for engaging such locking-gear, such locking-gear splined on such shaft and movable relatively to and out of operative relation with such locking-rack, a spring operating to hold such locking-gear in engagement with such locking-rack, an operating-head on such shaft adapted to be engaged by an operating-key and such locking-gear adapted to be forced out of engagement with such locking-rack by the operating-key when in engagement with such operating-head.

9. In a loose-leaf binder, a cover-plate having an impaling-pin or impaling-pins secured thereto, a back-plate, mechanism for supporting guiding and operating such cover-plate on such back-plate comprising racks secured to such cover-plate and a shaft working in bearings on such back-plate and carrying pinions for engaging such racks and means for locking such shaft against rotation at any desired point, such means comprising a locking-gear on such shaft and a fixed locking-rack for engaging such locking-gear, such locking-gear splined on such shaft and movable relatively to and out of operating relation with such locking-rack, a spring operating to hold such locking-gear in engagement with such locking-rack, an operating-head on such shaft adapted to be engaged by an operating-key and such locking-gear adapted to be forced out of engagement with such locking-rack by the operating-key when in engagement with such operating-head.

10. In a loose-leaf binder, a cover-plate having an impaling-pin or impaling-pins secured thereto, a back-plate, mechanism for supporting guiding and operating such cover-plate on such back-plate comprising a rack secured to such cover-plate and a shaft working in bearings on such back-plate and carrying a pinion for engaging such rack and means for locking such shaft against rotation at any desired point, such means comprising a locking-gear on such shaft and a fixed locking-rack for engaging such locking-gear, such locking-gear splined on such shaft and movable relatively to and out of operative relation with such

locking-rack, a spring operating to hold such locking-gear in engagement with such locking-rack, an operating-head on such shaft adapted to be engaged by an operating-key and such locking-gear adapted to be forced out of engagement with such locking-rack by the operating-key when in engagement with such operating-head.

11. In a loose-leaf binder, in combination with the rotating operating-shaft thereof and connections between such shaft and a movable member in such binder, a locking mechanism for such operating-shaft comprising a locking-gear on such shaft and a locking-rack for engaging such locking-gear, one of such elements of locking-rack and locking-gear movable relatively to and out of operative relation with the other, a spring operating to hold such locking elements in locking engagement, an operating-head on such shaft adapted to be engaged by an operating-key and the movable one of such elements of locking-gear and locking-rack adapted to be forced out of engagement with the other by the operating-key when in engagement with such operating-head.

12. In a loose-leaf binder, in combination with the rotating operating-shaft thereof and connections between such shaft and a movable member in such binder, a locking mechanism for such operating-shaft comprising a locking-gear on such shaft and a fixed locking-rack for engaging such locking-gear, such locking-gear splined on such shaft and movable relatively to and out of operative relation with such locking-rack, a spring operating to hold such locking-gear in engagement with such locking-rack, an operating-head on such shaft adapted to be engaged by an operating-key and such locking-gear adapted to be forced out of engagement with such locking-rack by the operating-key when in engagement with such operating-head.

13. In a loose-leaf binder, a back-plate, a cover-plate having an impaling-pin or impaling-pins secured therein, a guideway on such back-plate, a guiding-arm on such cover-plate arranged to work in such guideway, a rack formed on such guiding-arm and a pinion cooperating with and engaging such rack, such pinion secured on an operating-shaft and such operating-shaft revoluble in bearings carried by such back-plate, such operating-shaft having its axis parallel with a plane passing through the axes of the impaling-pins and parallel also with the plane of motion of such cover-plates to and from each other.

14. In a loose-leaf binder, a back-plate, cover-plates having impaling-pins secured therein, a guideway on such back-plate, a guiding-arm secured to one of such cover-plates and arranged to work in such guideway on such back-plate, a rack formed on such guiding-arm, a pinion cooperating with

and engaging such rack, such pinion secured on an operating-shaft, such shaft working in bearings carried by such back-plate, and a suitable operating-rack secured to the other one of such cover-plates and engaging such pinion on the side thereof opposite to such guiding-arm, such operating-shaft having its axis parallel with a plane passing through the axes of the impaling-pins and parallel also with the plane of motion of such cover-plates to and from each other.

15. In a loose-leaf binder, a back-plate, cover-plates having impaling-pins secured therein, guideways on such back-plate, guiding-arms secured to one of such cover-plates and arranged to work in such guideways on such back-plate, racks formed on such guiding-arms, pinions cooperating with and engaging such racks, such pinions secured on an operating-shaft, such shaft working in bearings carried by such back-plate, and suitable

operating-racks secured to the other one of such cover-plates and engaging such pinions on the sides thereof opposite to such guiding-arms.

16. In a loose-leaf binder, a back-plate, a cover-plate, a guideway on such back-plate, a guiding-arm on such cover-plate arranged to work in such guideway, a rack formed on such guiding-arm and a pinion cooperating with and engaging such rack, such pinion secured on an operating-shaft and such operating-shaft revoluble in bearings carried by such back-plate, such operating-shaft having its axis lying parallel with the plane of motion of such cover-plates to and from each other and also parallel with the plane of such back-plate.

HENRY J. MOORE.

Witnesses:

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CLARA M. SIENER.