No. 750,922. PATENTED FEB. 2, 1904.

G. F. WATT.

BINDER FOR LOOSE LEAF BOOKS.

APPLICATION FILED FEB. 3, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

FIG. 1.

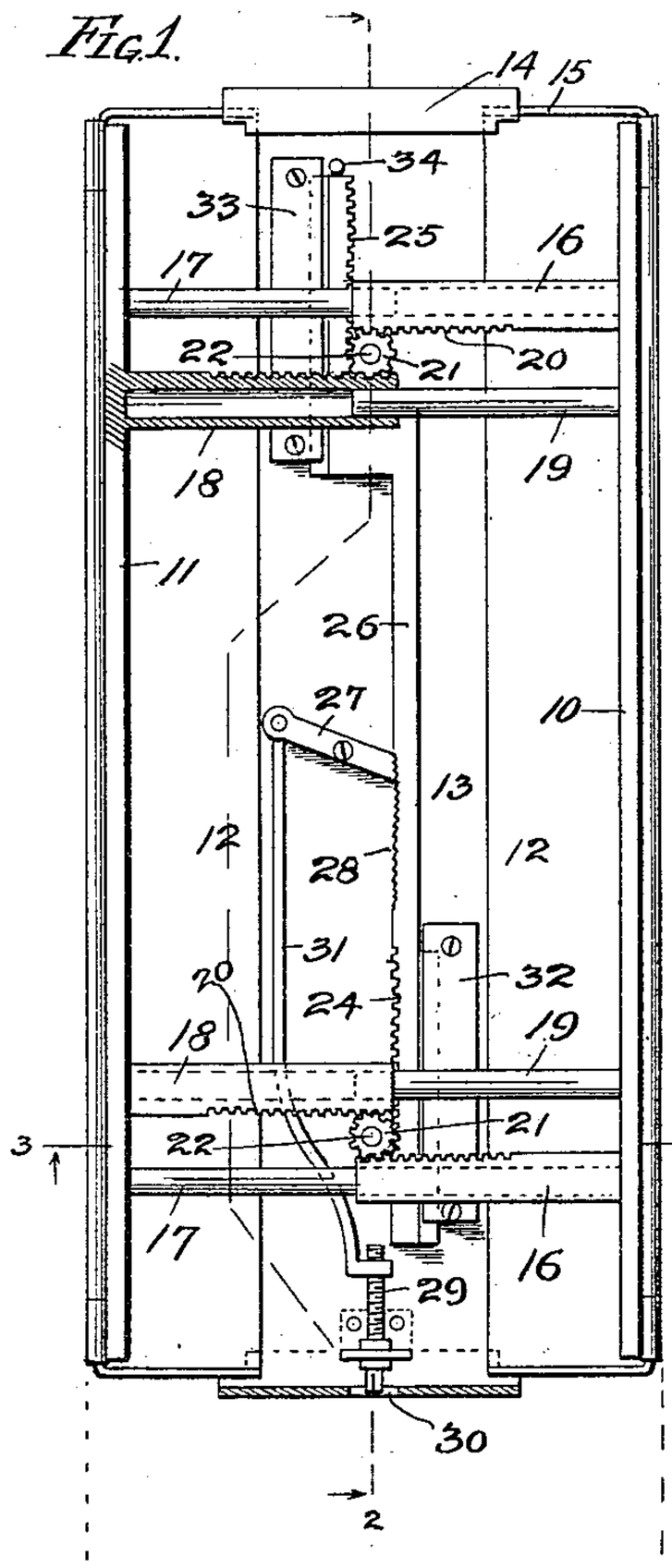


FIG. 2.

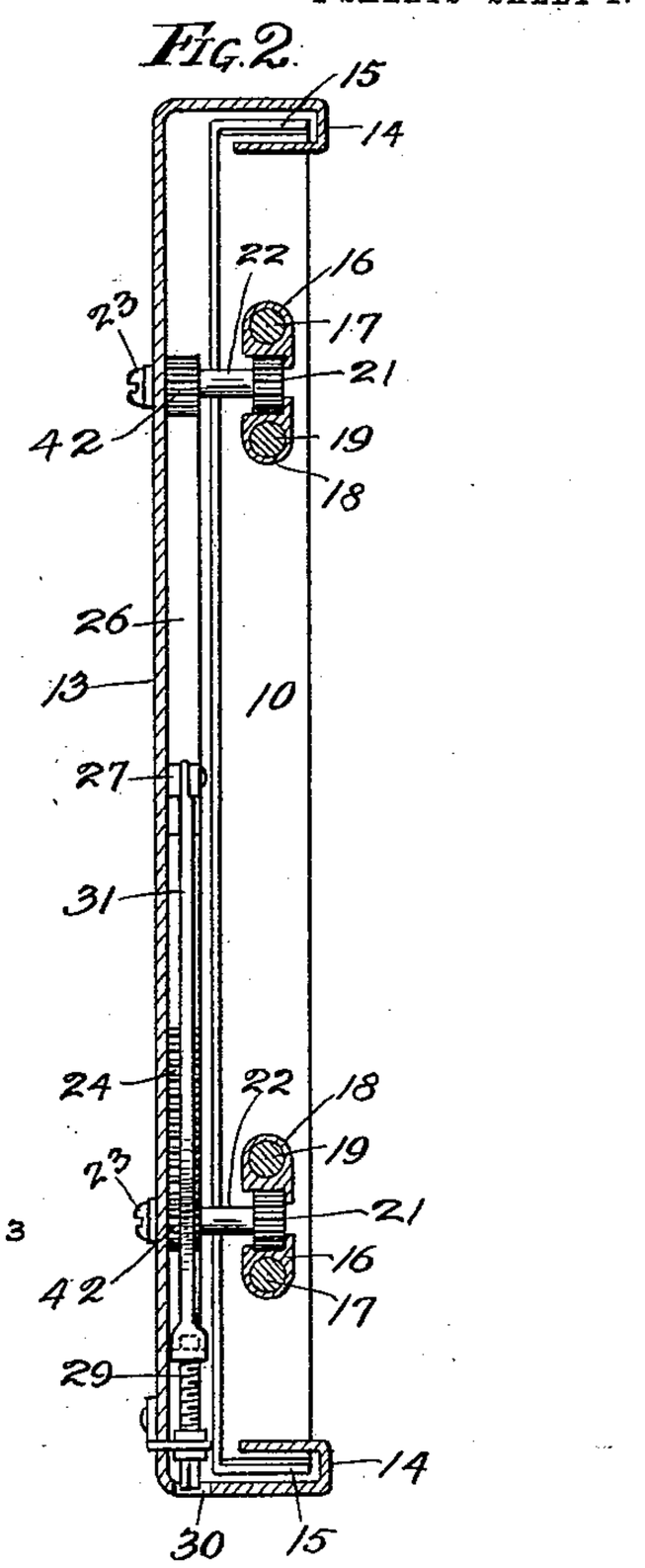


FIG. 3.

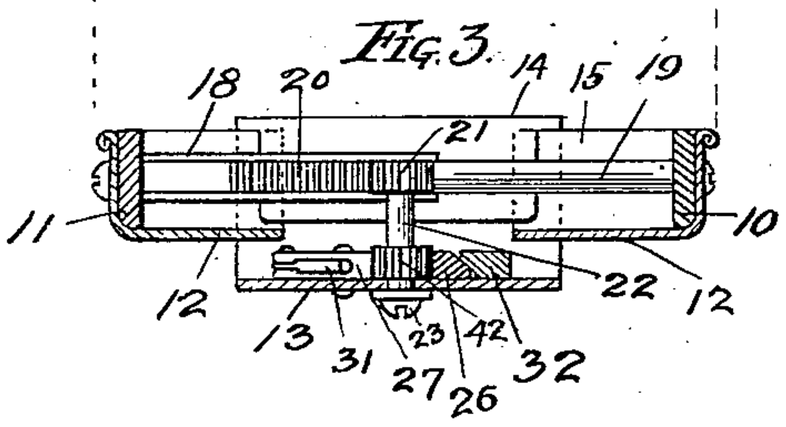
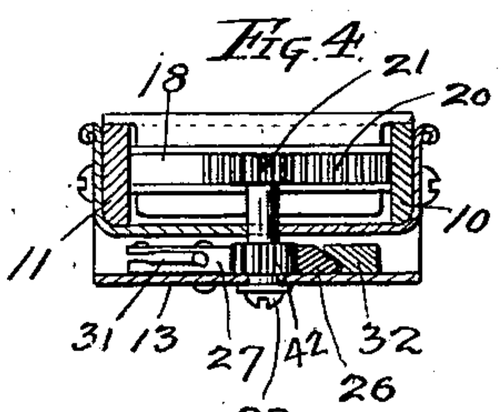


FIG. 4.



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BINDER FOR LOOSE LEAF BOOKS.

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NO MODEL. 2 SHEETS—SHEET 2.

FIG 5.

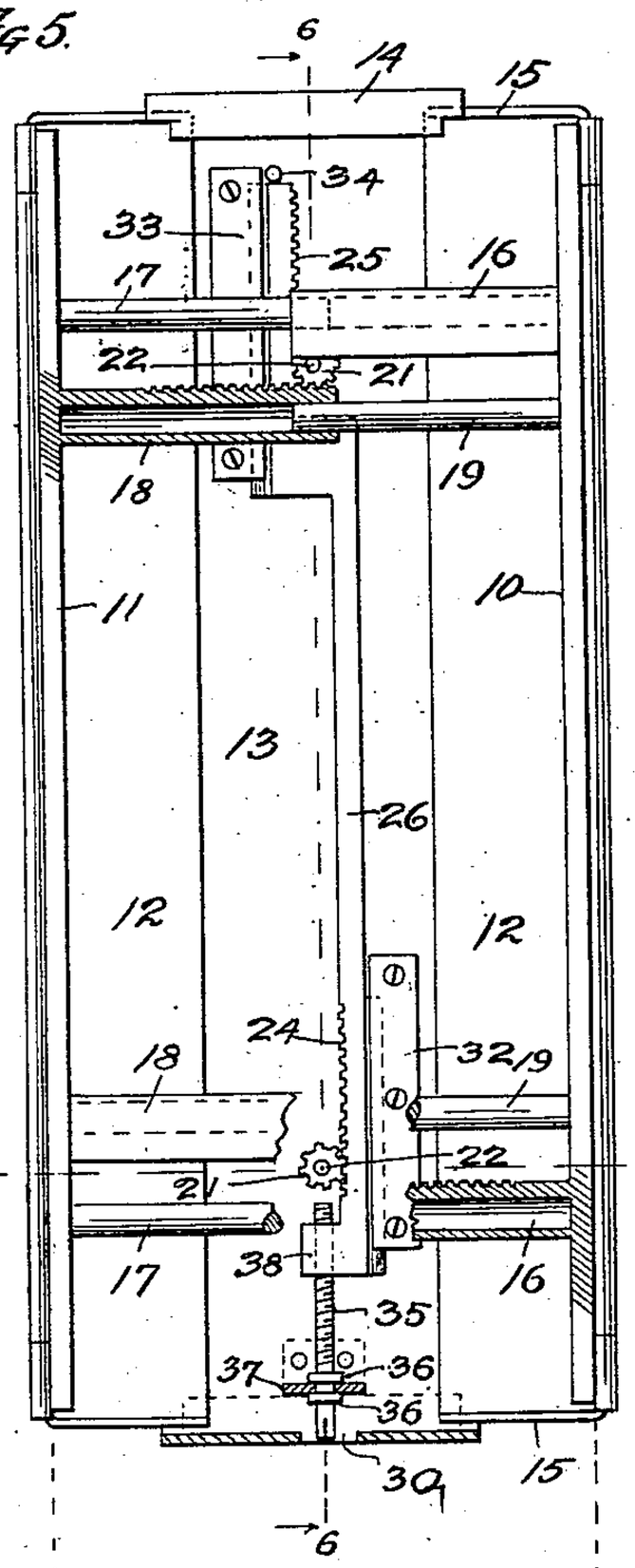


FIG 6.

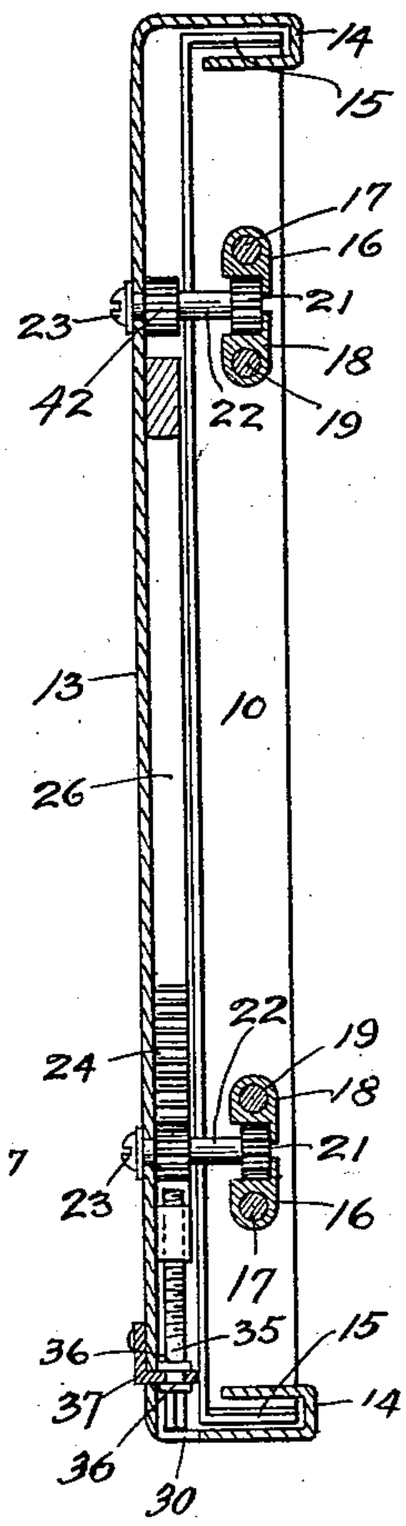


FIG. 7.

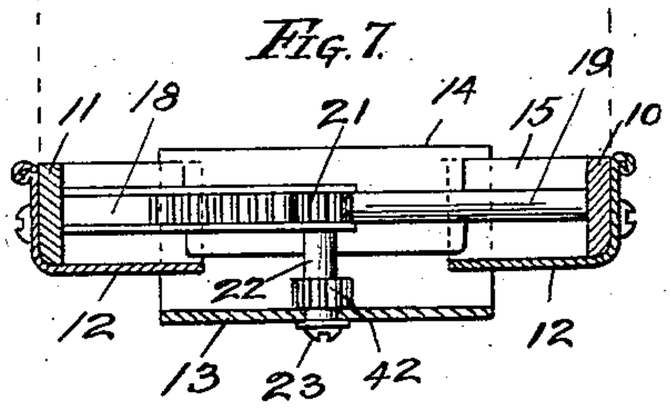
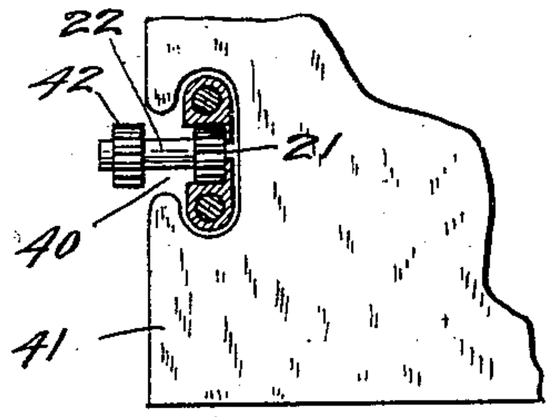


FIG. 8.



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No. 750,922. Patented February 2, 1904.

UNITED STATES PATENT OFFICE.

GEORGE F. WATT, OF CHICAGO, ILLINOIS.

BINDER FOR LOOSE-LEAF BOOKS.

SPECIFICATION forming part of Letters Patent No. 750,922, dated February 2, 1904.

Application filed February 3, 1902. Serial No. 92,271. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. WATT, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Binders for Loose-Leaf Books, of which the following is a specification.

This invention relates to the construction of binders for loose-leaf ledgers and other similar books.

The main features of the invention concern the posts upon which the leaves are threaded and the manner of giving movement to the posts in expanding and contracting the book and to the manner of locking the actuating device by which the posts are operated.

The nature of my improvements, as well as their mode of operation, will be fully understood from the accompanying drawings, in which—

Figure 1 shows an inside view of my improved binder, partly in section. Figs. 2 and 3 are sections upon the lines 2 2 and 3 3, respectively, of Fig. 1. Fig. 4 is a section similar to Fig. 3, showing the book contracted. Fig. 5 is a view similar to Fig. 1 of a modified construction. Figs. 6 and 7 are sections on the lines 6 6 and 7 7, respectively, of Fig. 5. Fig. 8 is a detail section showing one of the sheets in conjunction with the retaining-posts.

My invention, as shown in the drawings, is applied to what is known as a "three-piece-back" binder—that is to say, it embodies the clamping-bars 10 and 11, to which the covers (not shown) are hinged, each being provided with an overhanging flange 12, forming part of the back of the book, and a plate 13, covering the open space between the flanges 12 and lapping over said flanges, so as to complete the back. This plate 13 forms a support for the devices by which the clamping-bars are opened and closed, and at its ends it is bent at right angles and then doubled upon itself, as plainly shown at 14 in Fig. 6, so as to inclose the end flanges 15 on the clamping-bars. The flanges 12 and 15 are preferably formed of sheet metal.

The posts upon which the paper is threaded are four in number, and each is composed of a male and a female section adapted to telescope and permit the clamping-bars to approach each other to the extent necessary to cause pressure upon the contents. In the case of the outer posts the female sections 16 are attached to the same bar, in this instance to bar 10, and their opposing male sections (shown at 17) to the other bar, and in this instance to bar 11. The female sections 18 of the inner posts are also both attached to the same bar—as, for instance, to bar 11—and the male sections 19 of the same posts are both attached to the opposing bar, which in the construction shown is bar 10. With this number of posts and this construction all the leaves will be uniformly positioned, becasue all will be bearing against either the female sections 16 or 18, and both pairs of those sections are adapted to hold the leaves upon them in identical positions.

The two companion posts at the top of the book are arranged close together, as shown, so that both may enter the same notch or recess 40 in the leaves 41, and the same is true of the two companion posts at the bottom of the book, as will be understood from Fig. 8. The openings in the leaves are oblong or oval and larger than those customarily employed; but I deem this an advantage rather than a detriment, as the paper has a more extended bearing in front and rear of the posts and will be more firmly held thereby.

The female post-sections 16 and 18 are all provided with racks 20 upon their proximate sides, and between each pair of them is located a pinion 21, meshing with the racks of both sections and mounted upon shafts 22, secured to the back 13 by screws 23 in such a way as to permit the shafts to revolve. When the pinions turn, it will be noticed that the post-sections 16 and 18 will move in opposite directions, so as to cause the clamping-bars to move toward or away from each other and the posts to lengthen or contract, according to the direction of the rotation of the pinions. The pinions 21 are caused to move in unison by racks 24 and 25 upon a sliding bar 26, meshing with pinions 42 on the shafts 22, and they may be operated either by power applied to the rack-bar or by power applied directly to the clamping-bars. Fig. 1 shows the device adapted to be operated in the latter way,

while the modification shown in Figs. 5, 6, and 7 shows means for imparting the sliding movement to the rack-bar, and thus causing the expanding or contracting of the bars. Where the device is constructed as in Fig. 1, the rack-bar simply serves as a means of regulating and securing uniformity in the movement of the pinions, so that the book will be expanded and contracted to the same extent at top and bottom.

In order to hold the clamping-bars rigidly in any of their adjusted positions, I provide means for locking the rack-bar against movement. Any suitable means may be used for that purpose; but I have illustrated a pivoted dog 27, engaging teeth 28 on the rack-bar, a screw 29, operable through an opening 30 in the bottom end of plate 13, and a connecting-link 31, extending from the screw to the dog. This link has its end bent at right angles and threaded on the screw, so that by turning the screw the link may be forced upward, and thereby cause the dog to release its hold on the rack-bar. When the link is turned down, it causes the locking of the rack-bar. The rack-bar's movements are guided by guides 32 and 33, and these guides preferably overlap the rack-bar, so as to confine it against the plate 13. A stop 34 may be employed to limit the motion of the rack-bar in the expanding direction. The parts are shown in Fig. 1 as being fully expanded.

In the modified construction shown in Figs. 5, 6, and 7 I have not shown any means solely for locking the rack-bar, but instead thereof I actuate the rack-bar by means adapted to hold it against movement when at rest and consisting of a screw 35, accessible through the opening 30 in the bottom end of the plate 13. This screw is provided with shoulders 36 36 at opposite sides of a clip 37, through which it passes and is prevented from moving longitudinally. It passes through a projection 38 on the rack-bar, as plainly shown, and is adapted to impart longitudinal movement to the rack-bar and through the rack-bar to actuate the post-pinions 21. Except as described, the modified construction is like that illustrated in Figs. 1 to 4. This construction locks the rack-bar against longitudinal movement when such movement is not desired or is not produced by operating the screw 35 as effectually as does the locking-pawl of the other construction; but of course I do not wish to be understood as saying that no locking means can be employed with the construction of Figs. 5 to 7, as obviously means similar to those shown in the other figures might be used, if desired.

I claim—

1. In a loose-leaf binder, the combination with the clamping-bars and two companion telescoping posts having their male and also their female sections attached to different bars, of a pinion located between the posts and engaging racks formed on the posts, substantially as specified.

2. In a loose-leaf binder, the combination with the clamping-bars and two companion telescoping posts having their male and also their female sections attached to different bars, of a pinion located between the posts and engaging racks formed on two of the post-sections, one in each post, and attached to different bars, substantially as specified.

3. In a loose-leaf binder, the combination with the clamping-bars and two companion telescoping posts having their male and also their female sections attached to different bars, of a pinion located between the posts and engaging racks formed on the female sections of both posts, substantially as specified.

4. In a loose-leaf binder, the combination with the clamping-bars and two companion telescoping posts having their male and also their female sections attached to different bars, of a pinion located between the posts and engaging racks formed on oppositely-moving sections in the posts, substantially as specified.

5. In a loose-leaf binder, the combination with the clamping-bars and two companion telescoping posts having their male and also their female sections attached to different bars, of a pinion located between the posts and engaging racks formed on the posts, and means for controlling the rotation of the pinion, substantially as specified.

6. In a loose-leaf binder, the combination with the clamping-bars and two companion telescoping posts having their male and also their female sections attached to different bars, of a pinion located between the posts and engaging racks formed on the posts, and a sliding rack-bar for controlling said pinion, substantially as specified.

7. In a loose-leaf binder, the combination with the clamping-bars and two companion telescoping posts having their male and also their female sections attached to different bars, of a pinion located between the posts and engaging racks formed on the post, and a sliding rack and a second pinion for controlling said pinion, substantially as specified.

8. In a loose-leaf binder, the combination with the clamping-bars and two companion telescoping posts having their male and also their female sections attached to different bars, of a pinion located between the posts and engaging racks formed on the posts, a sliding rack-bar for controlling said pinion, and means for locking said rack-bar, substantially as specified.

9. In a loose-leaf binder, the combination with the clamping-bars and two companion telescoping posts having their male and also their female sections attachad to different bars, of a pinion located between the posts and engaging racks formed on the posts, a sliding rack-bar for controlling said pinion, and means for sliding said bar, substantially as specified.

10. In a loose-leaf binder, the combination with the clamping-bars and two companion telescoping posts having their male and also their female sections attached to different bars, of a pinion located between the posts and engaging racks formed on the posts, a sliding rack-bar for controlling said pinion, and a stationarily-held screw for sliding said bar, substantially as specified.

11. In a loose-leaf binder, the combination with the clamping-bars, of companion leaf-holding posts composed of female sections 16 and 18 attached one to each bar, male sections 17 and 19 opposed to said female sections and also attached one to each bar, and a pinion located between said posts and meshing with racks formed on the proximate faces of the posts, substantially as specified.

12. In a loose-leaf binder, the combination with the clamping-bars and pairs of companion posts composed of female sections 16 and 18 attached to different bars and male sections 17 and 19 opposed to said female sections and also attached to different bars, of pinions located between the posts of each pair and meshing with racks formed on the proximate faces of the posts, substantially as specified.

13. In a loose-leaf binder, the combination with the clamping-bars and the telescoping post-sections, part of which sections have racks formed on them, of pinions 21 each meshing with racks upon sections attached to both bars, and means for securing uniformity in the rotation of the pinions, substantially as specified.

14. In a loose-leaf binder, the combination with the clamping-bars and pairs of companion posts composed of female sections 16 and 18 attached to different bars and male sections 17 and 19 opposed to said female sections and also attached to different bars, of pinions located between the posts of each pair and meshing with racks formed on the proximate faces of the posts, and a sliding rack-bar controlling said pinions and causing them to move in unison, substantially as specified.

15. In a loose-leaf binder the combination with the clamping-bars and pairs of companion posts composed of female sections 16 and 18 attached to different bars and male sections 17 and 19 opposed to said female sections and also attached to different bars, of pinions located between the posts of each pair and meshing with racks formed on the proximate faces of the posts, a sliding rack-bar controlling said pinions, and causing them to move in unison, and means for locking said rack-bar, substantially as specified.

16. In a loose-leaf binder, the combination with the clamping-bars and pairs of companion posts composed of female sections 16 and 18 attached to different bars and male sections 17 and 19 opposed to said female sections, and also attached to different bars, of pinions located between the posts of each pair and meshing with racks formed on the proximate faces of the posts, pinions on the same shafts with said post-pinions, and a sliding bar having racks meshing with said last-mentioned pinions, substantially as specified.

17. In a loose-leaf binder, the combination with the clamping-bars and pairs of companion posts composed of female sections 16 and 18 attached to different bars and male sections 17 and 19 opposed to said female sections, and also attached to different bars, of pinions located between the posts of each pair and meshing with racks formed on the proximate faces of the posts, other pinions on the same shafts with said post-pinions, a sliding rack-bar meshing with said last-mentioned pinions, and a screw imparting movement to said rack-bar, substantially as specified.

GEORGE F. WATT.

Witnesses:
GERTRUDE WATT,
H. M. MUNDAY.