

LOOSE LEAF BINDER.

Patented Apr. 19, 1910.

2 SHEETS—SHEET 1.



Christian L. Bartling
by J. L. Eisler Atty.

C. L. BARTLING.
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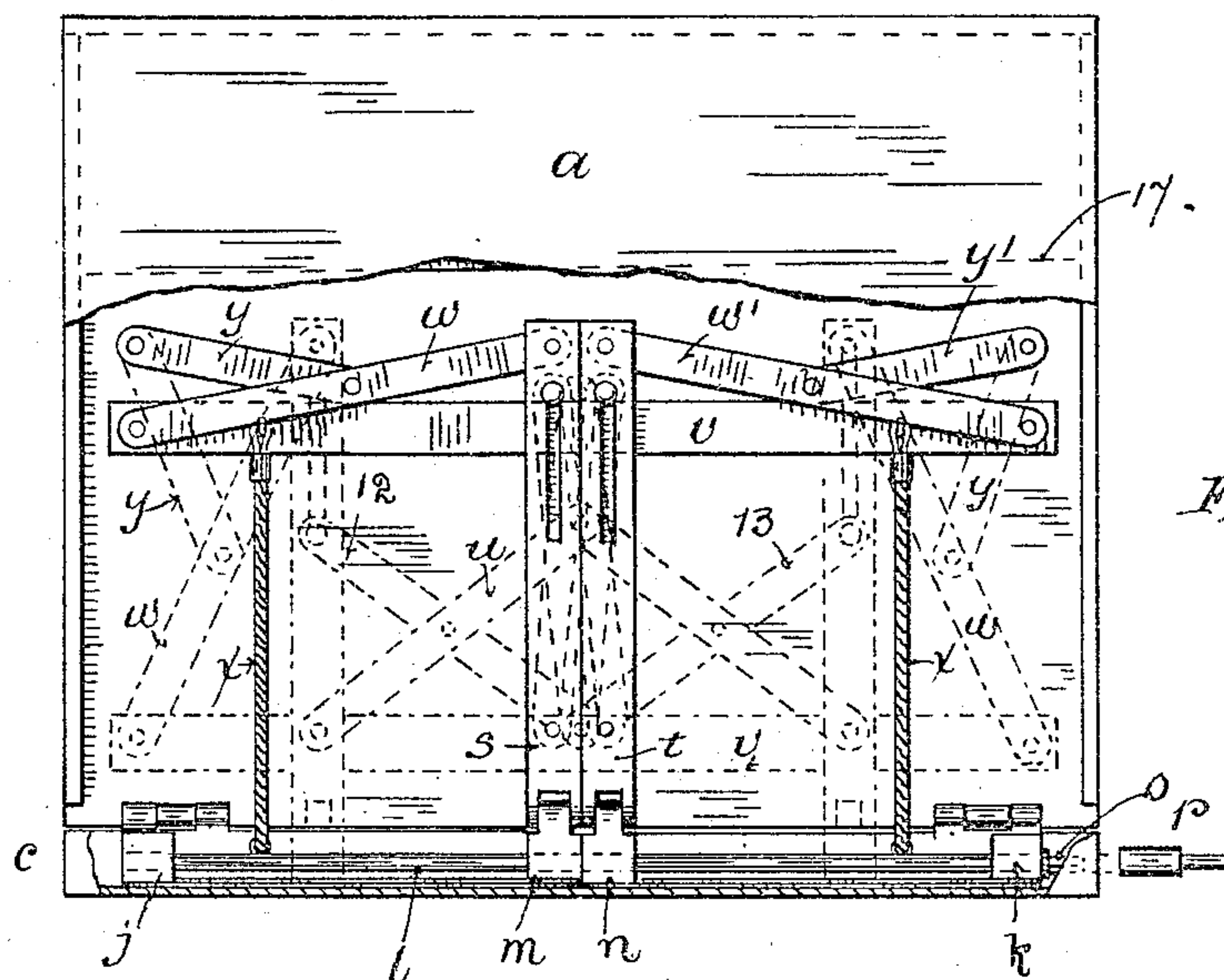


Fig. 3.

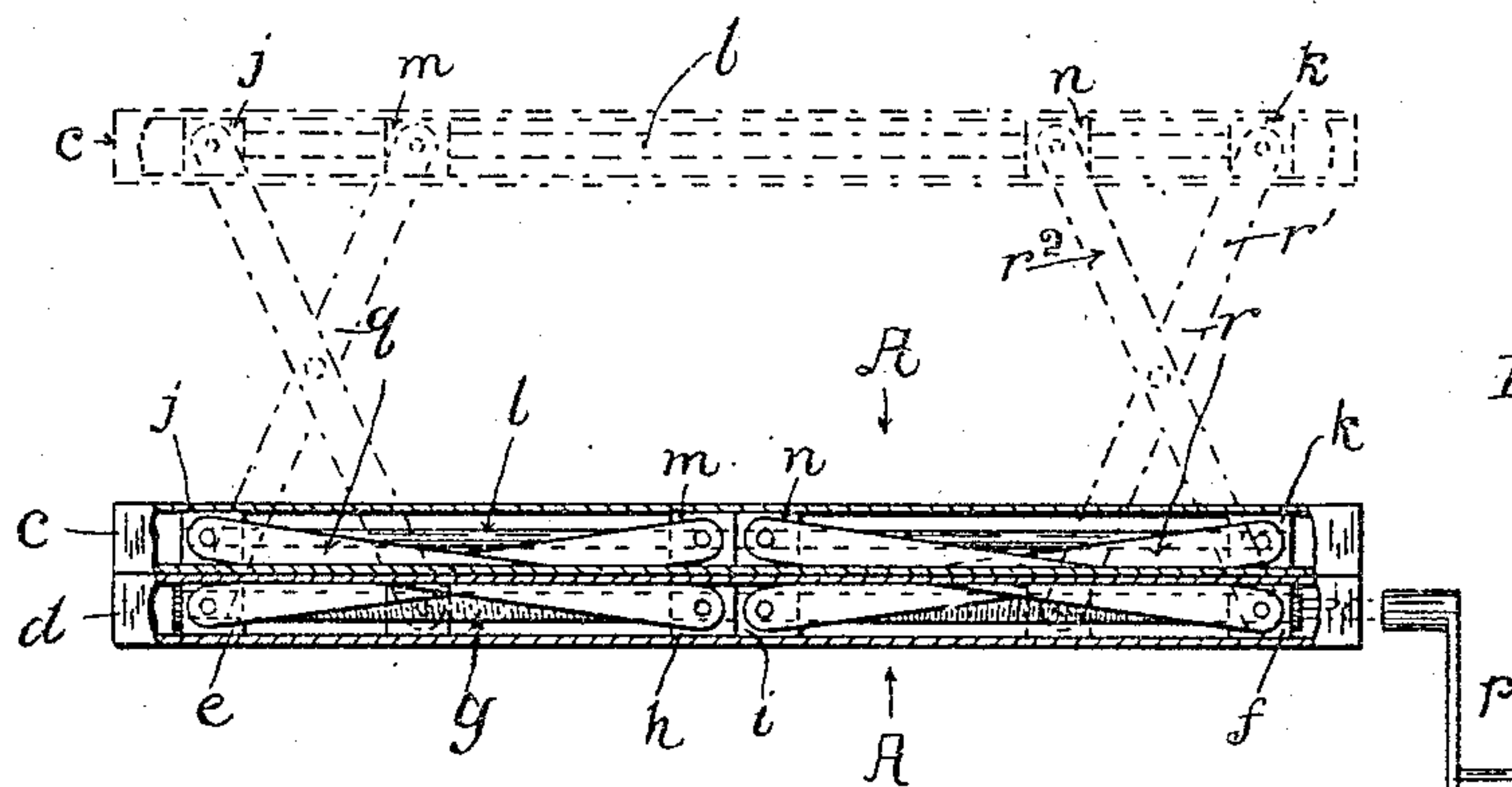


Fig. 4.

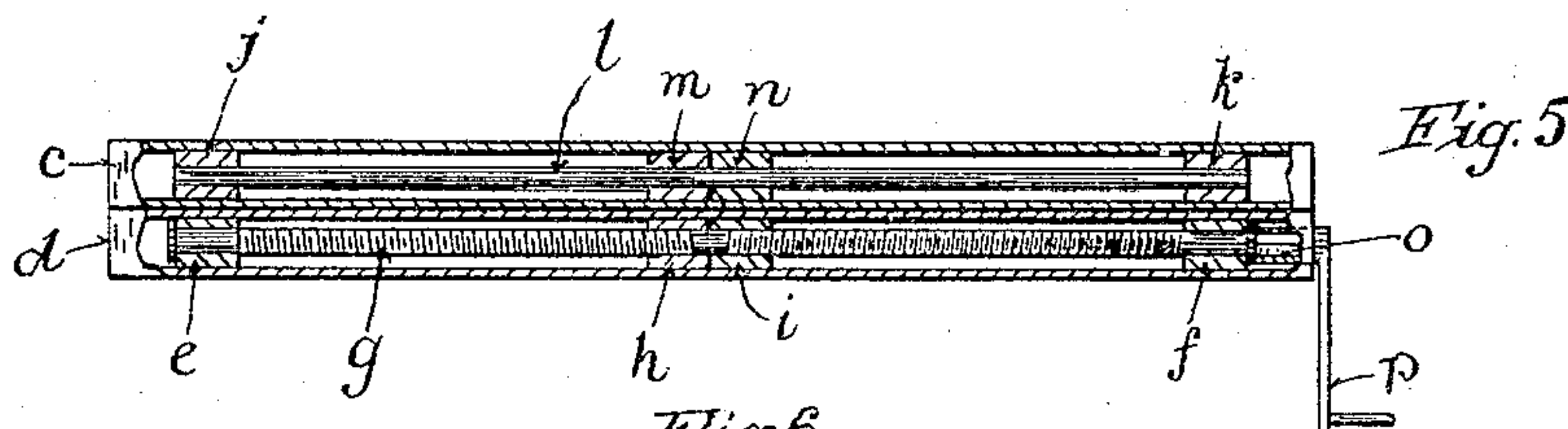


Fig. 5.

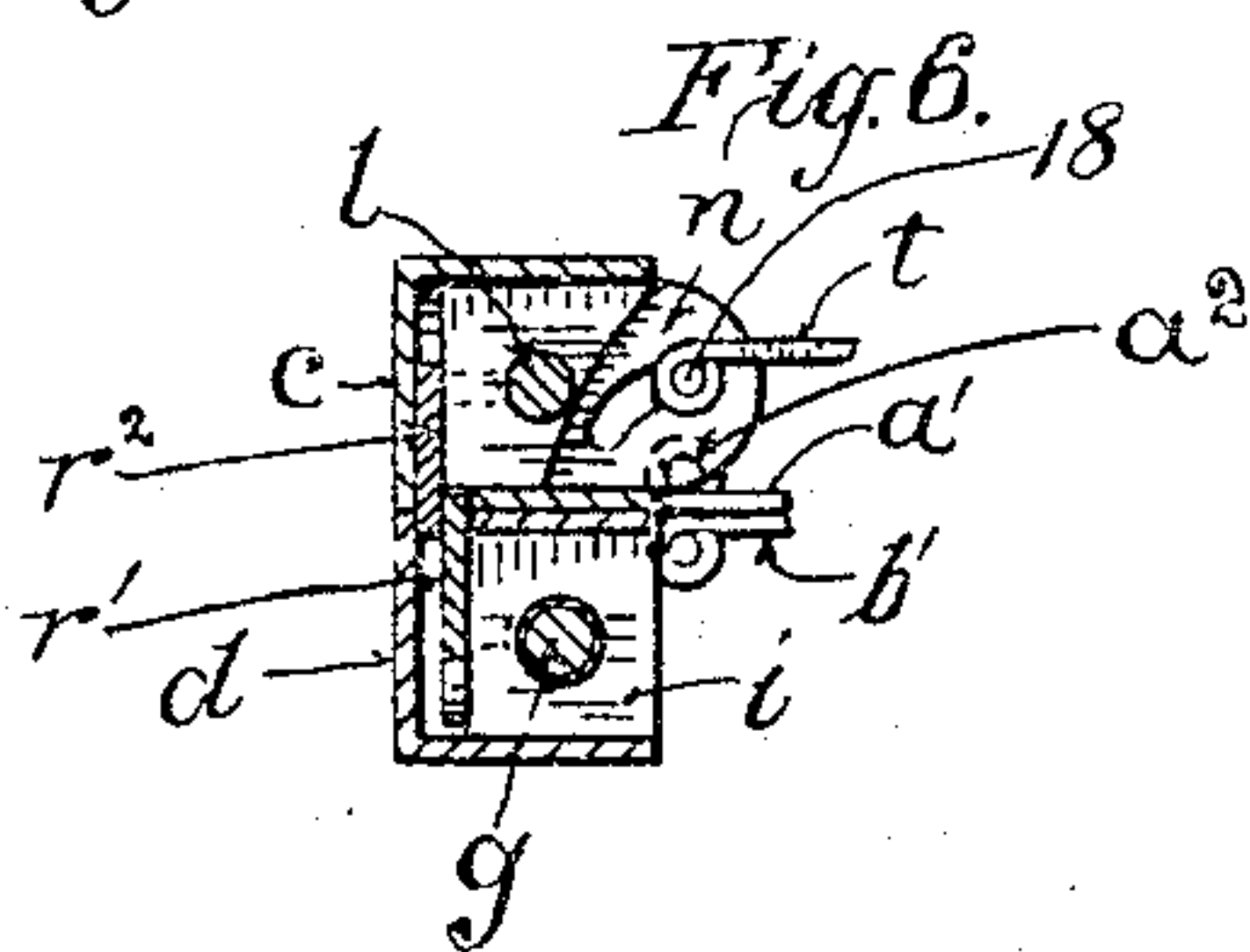


Fig. 6.

Witnesses:
John A. Spurr
Cecil Long

Inventor:
Christian L. Bartling
by *J. Geisler* Atty.

UNITED STATES PATENT OFFICE.

CHRISTIAN L. BARTLING, OF PORTLAND, OREGON.

LOOSE-LEAF BINDER.

955,307.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHRISTIAN L. BARTLING, a citizen of the United States, and residing at Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Improvement in Loose-Leaf Binders, of which the following is a specification, reference being had to the accompanying drawings, constituting a part thereof.

This invention relates to loose leaf binders of the type comprising two covers and means, including binding cords, for binding the loose sheets between the binding edges of the covers.

My invention has for its object to provide binding devices, of the type referred to, which are so contrived as to impose the work and stress of clamping the loose sheets between the covers upon positive mechanical clamping devices provided at the binding edges of the covers and operating on the lever principle, and to relieve the binding cords from the clamping stress, the only work required of them being to hold the leaves, which are slotted as usual, in place while inserting or removing other leaves.

In the drawings: Figure 1 is a perspective of my loose leaf binder illustrating the operation thereof and having parts broken away so as to disclose the binder or clamping devices; Fig. 2 is a similar view showing clamping means substantially the equivalents of those shown in Fig. 1, except that the actuating screw-shaft is located in the top cover near the outer edge, instead of in the binding edge of the lower cover, as shown in Fig. 1; Fig. 3 is a plan or top view of the top cover of my improved binder, embodying clamping means arranged substantially as shown in Fig. 1, part of the cover being broken away so as to disclose the operating parts incased within the top cover, and such parts are shown in full outline and dotted outline in their two extreme positions; Fig. 4 is a sectional rear-end elevation of the top and bottom covers, illustrating the operation of the means for clamping the binding edges of the cover upon the loose sheets inserted between them; and Fig. 5 is a sectional detail of part of the same devices shown in Fig. 4; Figs. 6 and 7 are cross sections on a line A—A of Fig. 4 through the hinged clamping cover sections *c*, *d*, Fig. 6 representing these parts as included in Fig.

1, and Fig. 7 showing the equivalent parts as included in Fig. 2.

Describing in the first instance my temporary binder as illustrated in Fig. 1: the same comprises upper and lower covers *a*, *b*, provided at their binding edges with hinge pieces or members *c*, *d*, each consisting of a hollow shell of rectangular cross section and constituting the clamping portions of the covers between which the leaves are bound. In the member *d* are fixed blocks *e*, *f*, (see Figs. 4 and 5) in which are journaled the ends of a screw shaft *g*, having right and left threads, on which threads are mounted nut-like blocks *h*, *i*. The blocks *h*, *i* are rectangular in cross section and are longitudinally slidable in the cover member *d* by the rotation of the screw shaft *g*. In the upper cover member *c* (which is constructed like the member *d*) are provided fixed blocks *j*, *k*, in which are secured the ends of a rod *l*, on which are slidably mounted blocks *m*, *n*. *o* is a key head, on the screw-shaft *g*, adapted to receive a removable key *p* by which the rotation of the screw-shaft *g* is accomplished, when the clamping cover sections *c*, *d* are to be moved together or apart for the removal or insertion of the leaves. The blocks *e*, *h*, *i*, *f* of the cover member *d* and the blocks *j*, *m*, *n*, *k* of the cover member *c* are connected by the links of the levers *q*, *r* of the "lazy tongs" principle. Thus, by rotating the screw shaft *g*, the blocks *h*, *i* will be moved toward or apart from each other, and to the blocks *m*, *n* will be transmitted a corresponding movement, whereby the cover members *c*, *d* may be separated or brought together at will, as illustrated in Fig. 4. To the movable blocks *m*, *n* are hinged slotted bars *s*, *t* connected with each other by the links of the "lazy tongs" lever system *u*. The extremities 12, 13 of the links *u* are movably connected to the slot ends of the bars *s*, *t*. Arranged at right angles to and under the bars *s*, *t* and the links *u* is a draft bar *v*, the outer ends of which are connected by links *w*, *w'* with the outer ends of the bars *s*, *t*, and said links *w*, *w'* are respectively connected with the top cover by links *y*, *y'*. To the ends of the bar *v* are connected the upper ends of the binding cords *x*, *x'*, the lower ends of which binding cords are connected to the lower cover member *d*. Such connection is accomplished, as shown, by providing the bar *v* with hooks 15, 16.

By reason of the arrangement of the parts as above described and illustrated in Fig. 1, the rotation of the screw shaft g in one direction or the other will move the blocks h, i outward or inward and correspondingly move the blocks, m, n , with the effect of compressing the cover members c, d upon each other, or moving the same apart, and the bars s, t , being hinged to the blocks m, n , will be correspondingly moved apart or together, and by their linked connections with the cross bar v , will move the latter, so as to relatively shorten or lengthen those portions of the cords x, x' extending between the cover members c, d .

It will be seen that the purpose of the lever system u , connecting the bars s, t , is also to cause the latter to remain parallel to each other during their described movement.

The type of binder shown by me in Fig. 2 is substantially, in its principle of operation, the same as illustrated in Fig. 1, and the parts identical with each other in the two examples are therefore lettered alike. The only differences between the two types of clamping means shown in Figs. 1 and 2 are the following: The threaded screw shaft g , shown in Fig. 1, is replaced by a smooth-faced rod z , held at its ends in the blocks 2, 5, fastened in place in the cover member d , and on the rod z slide the blocks 3, 4. To the blocks 2, 3, 4 and 5 the extremities of the jointed links q, r are connected. The actuating screw shaft 6 is journaled, near the outer end of the upper cover a , in bearings 6^a. The slotted bars 7, 8 (the equivalents of the above described slotted bars s, t) are connected by the links of the lever system 9; the manner of connection being substantially the same as described in the prior example. The extremities of the bars 7, 8 are provided with lugs 10, 11, having threaded perforations through which the screw shaft 6 extends. Thus, by the rotation of the threaded shaft 6, by a key, in one direction or the other, the bars 7, 8 will be moved toward or from each other, and in correspondence therewith the cover members c, d will be compressed or separated and the cords x, x' relatively shortened or lengthened.

The key-receiving ends of the actuating screw shaft (g or 6) may be adapted to be fitted only by a special key, as done in other types of loose leaf binders, the details of which are therefore unimportant. The cords x, x' , may, of course, be replaced by wire strands.

The top cover a is arranged in the form of a hollow box in which the described moving parts are contained, and the outer portion of such top cover may be strengthened by a filling strip 17, when the binder devices do not take up the entire area of the top cover.

In the type of my binder shown in Fig. 2, the cover-member c , hinged to the upper cover, does not require a rod like l (included in the devices of Fig. 1) for the blocks j', m', n', k' connecting the parallel bars s, t or 7, 8 with the hinged cover-member c are arranged to accommodate the movement of the cover plate a' on the hinges a^2 connecting the clamping cover-members c to said hinge plate a' .

The clamping cover-members, c and d , hinged to the main pieces of the cover, are merely three side shells so as to permit the longitudinal movement of the movable blocks.

The details are evident from the cross sections Figs. 6 and 7, and to trace the link-members of the levers q, r in these figures, such members of the lever r have been lettered r', r^2 respectively.

I claim:

1. A loose-leaf binder comprising two covers, means connecting and adapted to compress and separate the binding edges of the covers, binding cords connected at their opposite ends with said compressing and separating means and one cover, and means, connected with said compressing and separating means, adapted to shorten and lengthen the binding cords relatively to the movement of said compressing and separating means.

2. A loose-leaf binder comprising two covers, a "lazy tongs" lever system connecting and adapted to compress and separate the binding edges of the covers, a draft member in one cover, binding cords connected thereto and with the opposite cover, and means connected with said lever system adapted to move the draft member so as to lengthen and shorten the binding cords relatively to the movement of the clamping cover members.

3. A loose-leaf binder comprising two covers, a "lazy tongs" lever system connecting and adapted to compress and separate the binding edges of the covers, a draft bar in one cover, binding cords connected thereto and with the opposite cover, and means connected with said lever system adapted to move the draft member so as to lengthen and shorten the binding cords relatively to the movement of the clamping cover members.

4. A loose-leaf binder comprising two covers, a "lazy tongs" lever system connecting and adapted to compress and separate the binding edges of the covers, a draft member in one cover, binding cords connected thereto and with the opposite cover, and means connected with said clamping means and adapted to move the draft member so as to lengthen and shorten the binding cords relative to the movement of the clamping cover members.

5. A loose-leaf binder comprising two covers, a clamping member hinged to the binding edges of each cover, means, including an actuating screw, adapted to bring the clamping cover members together and apart, a draft member in one cover, binding cords connected thereto and with the opposite cover, and means connected with said clamping means and adapted to move the draft member so as to lengthen and shorten the binding cords relatively to the movement of the clamping cover members.

6. A loose-leaf binder comprising two covers, a clamping member hinged to the binding edges of each cover, movable blocks in each of the clamping cover members and "lazy tongs" lever system connecting such blocks, said lever system being adapted to compress and separate the binding edges of the covers in correspondence to the movement of the blocks, means adapted to move said movable blocks together and apart, a draft member in one cover, binding cords connected thereto and with the opposite cover, and means connected with said block-moving means and adapted to move the draft member so as to lengthen and shorten the binding cords relatively to the movement of the clamping cover members.

7. A loose-leaf binder comprising two covers, a clamping member hinged to the binding edges of each cover, a "lazy tongs" lever system connecting such clamping cover-members, means, including an actuating screw, adapted to operate said lever system to bring the clamping members together and apart, a draft member in one cover, binding cords connected thereto and with the opposite cover, and means connected with said lever system adapted to move the draft member so as to lengthen and shorten the binding cords relatively to the movement of the clamping cover-members.

8. A loose-leaf binder comprising two covers, a clamping member hinged to the binding edges of each cover, movable blocks in the binding edges of the covers, an actuating screw, links, arranged as "lazy tongs", connecting said movable blocks and adapted to compress and separate said binding edges, a draft member in one cover, binding cords connected thereto and with the opposite cover, and means connected with said lever system adapted to move the draft member so as to lengthen and shorten the binding cords relatively to the movement of the clamping cover-members.

9. A loose-leaf binder comprising two covers, a clamping member hinged to the binding edges of each cover, said clamping cover-members being chambered longitudinally, a right and left screw shaft journaled in one of such clamping cover-members, a rod in the companion clamping cover-member, nut-like blocks on the screw shank and companion

sliding blocks on said rod, and a lever system connecting the blocks adapted to compress and separate said cover members upon the rotation of the screw, means adapted to move said movable blocks together and apart, a draft member in one cover, binding cords connected thereto and with the opposite cover, and means connected with said lever system adapted to move the draft member so as to lengthen and shorten the binding cords relatively to the movement of the clamping cover-members.

10. A loose-leaf binder comprising two covers, movable blocks in the binding edges of the covers, an actuating screw, links, arranged as "lazy tongs", connecting said movable blocks and adapted to compress and separate said binding edges, parallel bars hinged to the movable blocks of one cover, a lever system connecting the bars and adapted to maintain the same in their relative position while moving with said blocks, a draft bar arranged at right angles to the parallel bars, binding cords connected to the draft bar and the opposite covers, and an actuating screw-shaft and connections adapted to move said blocks and the parallel bars together and apart simultaneously.

11. A loose-leaf binder comprising two covers, a clamping member hinged to the binding edges of each cover, means, including an actuating screw, adapted to bring the clamping cover-members together and apart, parallel bars in one cover, and connected with said cover-compressing means, a lever system connecting the bars and adapted to maintain the same in their relative position while moving with said blocks, a draft bar arranged at right angles to the parallel bars, binding cords connected to the draft bar and the opposite covers, an actuating screw, the connections adapted to simultaneously operate the cover-compressing means and move said parallel bars.

12. A loose-leaf binder comprising two covers, a clamping member hinged to the binding edges of each cover, a "lazy tongs" lever system connecting such clamping cover-members, means, including an actuating screw, adapted to operate said lever system to bring the clamping cover members together and apart, parallel bars in one cover and connected with said cover-compressing means, a draft bar arranged at right angles to the parallel bars, binding cords connected to the draft bar and the opposite covers, an actuating screw, and connections adapted to simultaneously operate the cover-compressing means and move said parallel bars.

13. A loose-leaf binder comprising two covers, a clamping member hinged to the binding edges of each cover, movable blocks in each of the clamping cover members and "lazy tongs" lever system connecting such blocks, said lever system being adapted to

compress and separate the binding edges of the covers in correspondence to the movement of the blocks, parallel bars hinged to the movable blocks of one cover, a lever system connecting the bars and adapted to maintain the same in their relative position while moving with said blocks, a draft bar arranged at right angles to the parallel bars, binding cords connected to the draft bar and the opposite covers, an actuating screw-shaft, and connections adapted to move said blocks and the parallel bars together and apart simultaneously.

14. A loose-leaf binder comprising two covers, a clamping member hinged to the binding edges of each cover, movable blocks in each of the clamping cover-members and "lazy tongs" lever system connecting such blocks, said lever system being adapted to compress and separate the binding edges of the covers in correspondence to the movement of the blocks, parallel bars hinged to the movable blocks of one cover, a lever system connecting the bars and adapted to maintain the same in their relative position while moving with said blocks, a draft bar arranged at right angles to the parallel bars, links connecting such draft bar to the parallel bars and connections between such connecting links and the cover, cords fastened at their ends to the draft bar and the opposite cover, an actuating screw-shaft, and connections adapted to move said blocks and the parallel bars together and apart simultaneously.

15. A loose-leaf binder comprising two covers, a clamping member hinged to the binding edges of each cover, movable blocks in each of the clamping cover-members and "lazy tongs" lever system connecting such blocks, said lever system being adapted to compress and separate the binding edges of the covers in correspondence to the movement of the blocks, means adapted to move said movable blocks together and apart, parallel bars hinged to the movable blocks of one cover, a lever system connecting the bars and adapted to maintain the same in their relative position while moving with said blocks, a draft bar arranged at right angles to the parallel bars, links connecting such draft bar to the parallel bars, and connections between such connecting links and the cover, cords fastened at their ends to the draft bar and the opposite cover.

16. A loose-leaf binder comprising two covers one thereof being hollow in part, a clamping member hinged to the binding

edges of each cover, said clamping cover-members being chambered longitudinally, a right and left screw-shaft journaled in one of such clamping cover-members, a rod in the companion clamping cover-member, nut-like blocks on the screw shank and companion sliding blocks on said rod, and a lever system connecting the blocks adapted to compress and separate said cover-members upon the rotation of the screw, parallel bars hinged to the movable blocks of one cover, a lever system connecting the bars and adapted to maintain the same in their relative position while moving with said blocks, a draft bar arranged at right angles to the parallel bars, binding cords connected to the draft bar and the opposite covers, an actuating screw-shaft, and connections adapted to move said blocks and the parallel bars together and apart simultaneously.

17. A loose-leaf binder comprising two covers one thereof being hollow in part, a clamping member hinged to the binding edges of each cover, said clamping cover-members being chambered longitudinally, a right and left screw-shaft journaled in one of such clamping cover-members, a rod in the companion clamping cover-member, nut-like blocks on the screw-shank and companion sliding blocks on said rod, and a lever system connecting the blocks adapted to compress and separate said cover-members upon the rotation of the screw, means adapted to move said movable blocks together and apart, parallel bars hinged to the movable blocks of one cover, a lever system connecting the bars and adapted to maintain the same in their relative position while moving with said blocks, a draft bar arranged at right angles to the parallel bars, binding cords connected to the draft bar and the opposite covers, links connecting such draft bar to the parallel bars, and connections between such connecting links and the cover, cords fastened at their ends to the draft bar and the opposite cover.

18. A loose-leaf binder comprising two covers, binding cords connecting the same, means adapted to compress and separate the binding edges of the covers, and means adapted to lengthen and shorten the binding cords relatively to the operation of said compressing means.

CHRISTIAN L. BARTLING.

Witnesses:

CECIL LONG,
JOHN SPERB.