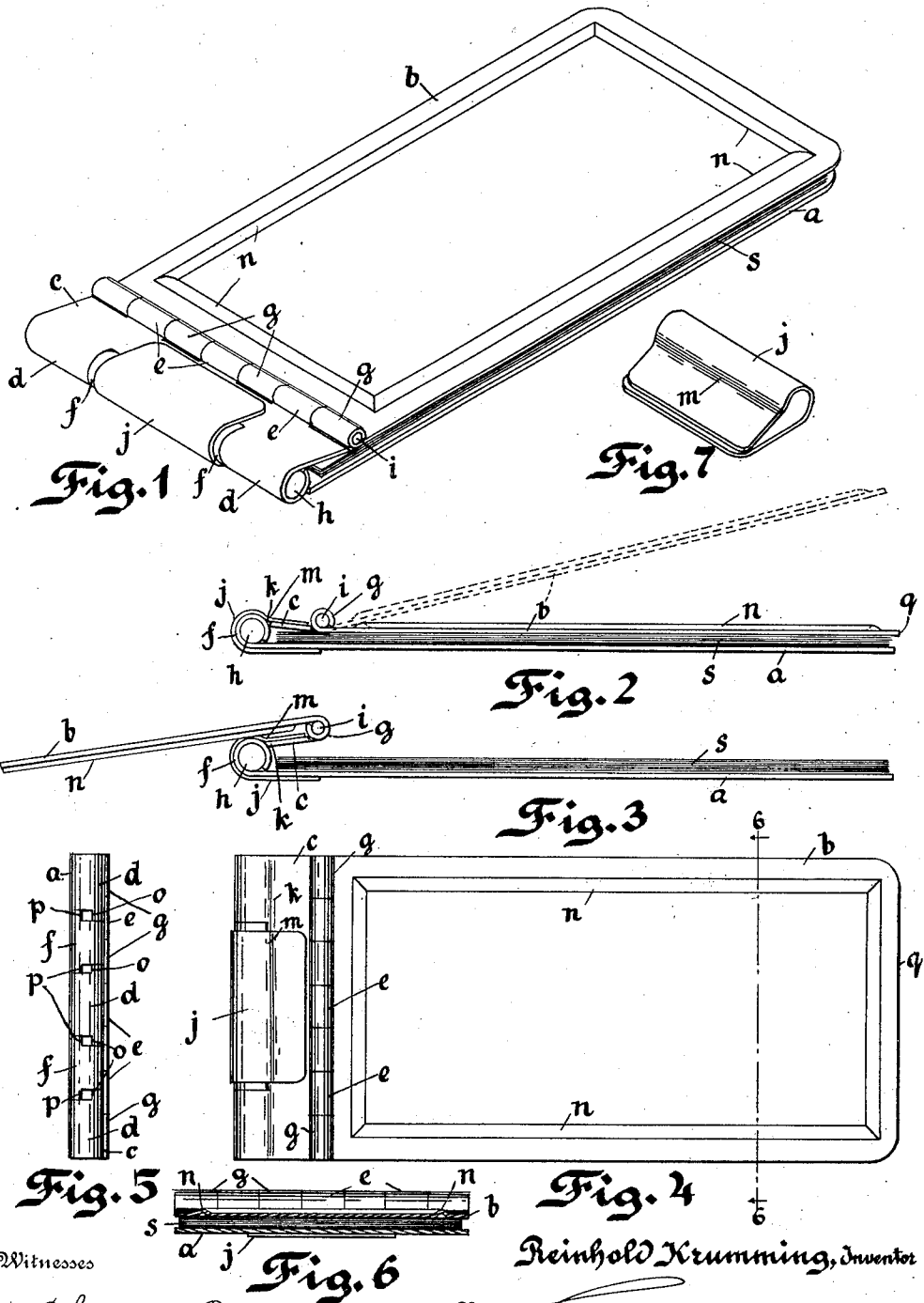


R. KRUMMING.
 SPRING BINDER FOR LOOSE SHEETS.
 APPLICATION FILED MAY 26, 1910.

1,058,871.

Patented Apr. 15, 1913.



Witnesses

Florence M. Mallon.
 Joseph M. Lumber

Reinhold Krumming, Inventor

By *Angus S. Moore* Attorney

UNITED STATES PATENT OFFICE.

REINHOLD KRUMMING, OF MILWAUKEE, WISCONSIN.

SPRING-BINDER FOR LOOSE SHEETS.

1,058,871.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, REINHOLD KRUMMING, of Milwaukee, Wisconsin, have invented a Spring-Binder for Loose Sheets, of which the following is a specification.

This invention relates to loose-leaf binders of that class which operate with a spring to hold the loose leaves in the binder, and constructed with two hinges, one a simple hinge to open the cover, and the other a spring-hinge to hold the leaves.

My invention has for its object to improve this class of devices by providing a simpler, neater, cheaper and more efficient form of spring-hinge than has been heretofore in use; and further to provide means for limiting the degree of opening of the spring-hinge.

I further aim to provide novel means for enabling the front-cover to be quickly opened by the fingers.

My invention comprises the constructions and combinations which will be hereafter described and more particularly pointed out in my claims.

The nature of my invention will best be understood from a consideration of the accompanying drawings, which show the most improved form thereof, taken in connection with the following detailed description.

In these drawings Figure 1 is a perspective view of a binder constructed according to my invention; Fig. 2 is a side-edge view thereof in closed position; Fig. 3 is a similar view in position for removing or inserting leaves; Fig. 4 is a plan view thereof; Fig. 5 is a back-edge view thereof with the spring removed; Fig. 6 is a transverse section thereof on the plane 6; and Fig. 7 is a perspective view of the spring separately.

The binder as shown comprises a back-plate *a* forming a back-cover; a front-plate *b* forming a front-cover; a hinge-leaf *c*, which has pintle-rolls *d* and *e* turned on the opposite edges thereof, interlocking with corresponding pintle-rolls *f* and *g* on the plates *a* and *b* respectively; and two pintles *h* and *i* uniting the respective pintle-rolls. The binder is completed with the addition of the plate-spring *j*, which is bent into a U-shape proper to embrace the pintle-rolls *d* and *f* and lie flat upon the faces of the members *a* and *c* respectively, thus keeping the hinge-joint at *i* pressed constantly against the back-cover *a* or upon any loose sheets *s* that may be included between them.

In the form as shown in Fig. 1, the plane portion of the members *a* and *c* are formed tangential to the hinge-rolls *d* and *f*; but in order to prevent the spring *j* from sliding off when the spring-hinge is opened, it is preferable to form a slight concavity *k* at the base of one or both pintle-rolls, as shown in Figs. 2 and 3, the spring *j* being given a corresponding concavity *m* whereby it is prevented from sliding away from the back.

The manner of using the binder will be understood from Figs. 2 and 3, the cover *b* being merely turned upon the pintle *i* where it is only desired to write upon or inspect some of the leaves in the binder; but when it is desired to remove or insert some leaves, the cover *b* is turned back into the position shown in Fig. 3 and the spring-hinge pried open against the force of the spring by using the pintle *h* as a fulcrum. In this operation a great strain is brought upon the cover-plate *b* at the fulcrum, and unless it is of very stout metal it will yield more or less, thus causing the cover-plate to become curled or bent and preventing it from shutting properly. In order to prevent this from taking place I may press ribs or grooves *n* in the cover-plate, thus strengthening it without necessarily increasing the thickness of the metal, and as books of this class have to be manufactured and sold at a very small profit, it will be readily understood that this saving of metal is an important consideration to the manufacturer, as well as to the user in the bulk and weight of the column which he has to carry.

As the spring-hinge is not intended to be opened to more than a limited extent, and to prevent the binder from being extended beyond its proper capacity, I may provide stop-devices which are shown in Fig. 5 (they are omitted from Fig. 1) and consist in forming the pintle-rolls *d* and *g* with interlocking shoulders *o* and *p*, which in the closed position of the hinges are separated from one another, but in the position of maximum opening come to an abutment and prevent any further opening. This feature, however, is not essential to the operativeness of my invention as a whole.

Another important feature, though a simple one, is the means which I provide to enable the book to be readily opened. As is well understood by users, such books are usually carried with only a few leaves, consequently the edges of the covers come close together,

and as they are thin become difficult to separate. To prevent this, the right-hand edge of the front-cover *b* is extended slightly beyond that of the back-cover, so that in
5 handling one readily catches the front-cover without touching the back-cover; so that the book opens instantly without fumbling.

It will be seen that my form of spring-binder consists of only three pieces besides
10 the spring and pintles, consequently it is not only more cheaply made than others but is actually better in being lighter and having no protruding edges or wires which are apt to catch in the clothing or gather dust.

15 I do not wish it understood that my invention is limited to the use of all the above described features and constructions, for some may be omitted and others may be varied or modified in various ways, as will
20 readily occur to those skilled in the art.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

25 1. A spring-binder comprising a back-cover, a front-cover, and a hinge-leaf united by hinge joints to one edge of each of said covers and means for resiliently pressing said hinge-leaf toward said back-cover, said front-cover when closed having its free edge
30 projecting throughout its entire length beyond the free edge of said back-cover, whereby it may be readily apprehended by the fingers and separated from said back-cover.

35 2. A spring-binder comprising, in combination, an integral metal plate forming a back-cover and having a pintle-roll turned at one edge, a hinge-leaf having a corresponding interlocking pintle-roll turned on
40 one edge, a pintle uniting said pintle-rolls, a U-shaped plate-spring embracing said pintle-rolls and exerting a closing pressure upon the joint, said hinge-leaf having further a pintle-roll turned on its other edge, a front-
45 cover having a pintle-roll corresponding to and interlocking with said last-named pintle-roll, and a second pintle uniting said last

two named pintle-rolls; said front-cover when closed having its free edge extending for the entire width of the cover beyond the
50 corresponding edge of the back cover.

3. A spring binder comprising a non-flexible front cover, a back cover and a double hinge connection between the same
55 at one edge, said hinge having an intermediate leaf portion of rigid nature to prevent forward and back movement of the covers one upon the other, the front cover when closed having its front edge extended
60 throughout its entire width beyond the front edge of the back cover as and for the purpose specified.

4. A spring binder comprising a non-flexible front cover, a non-flexible back
65 cover, and a double hinge connection between the same at adjacent edges of said covers, the intermediate leaf portion of said hinge being of rigid nature to prevent forward and back movement of the covers one upon the other and being spring pressed, the
70 front cover having its front edge extended throughout its entire width beyond the front edge of the back cover and when closed disposed with such edge projecting.

5. In a binder or holder for sheets or
75 pads, the combination of the back and front covers having knuckles on their rear ends; a clamp member having knuckles on its rear edge coacting with the knuckles of said back cover and knuckles on said front cover; pin-
80 tles for said knuckles, the front cover being arranged so that its front end projects beyond and overlaps the front end of the back cover for the entire length of such ends
85 when the covers are closed to facilitate the grasping of said front cover; and a tension spring for said clamp member.

In witness whereof I have hereunto set my hand this twenty-eighth day of April, 1910.

REINHOLD KRUMMING.

Witnesses:

EMIL J. ZINGEN,
GEORGE NETZ.