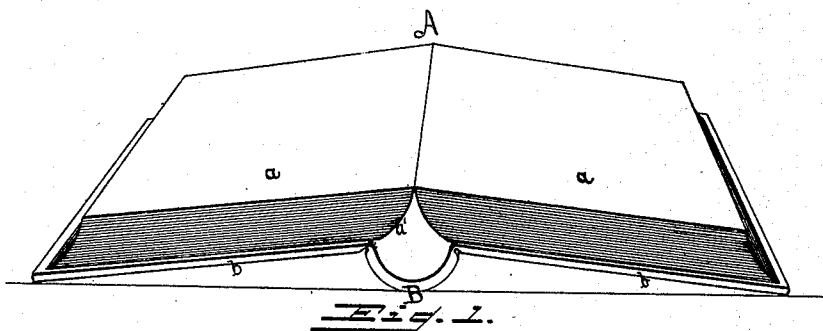
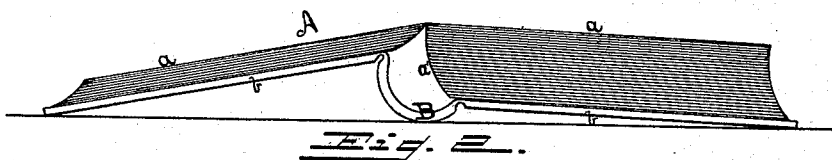
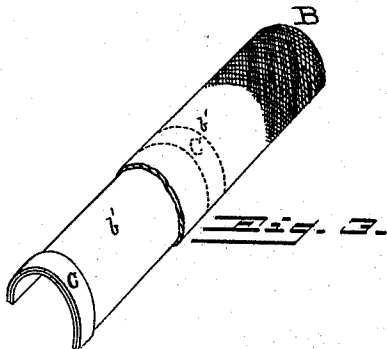
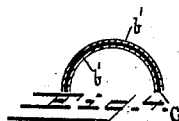
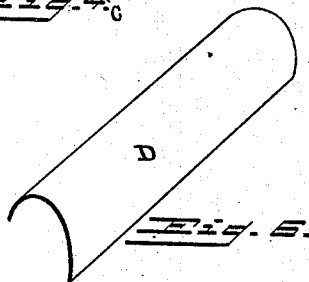


(No Model.)

F. P. F. MULLINS.
BLANK BOOK.

No. 416,639.

Patented Dec. 3, 1889.



WITNESSES

George M. Twist.
J. M. Longstreet.

INVENTOR

Clinton P. F. Mullins
By his Attorney
William H. Powell.

UNITED STATES PATENT OFFICE.

FENTON P. F. MULLINS, OF PHILADELPHIA, PENNSYLVANIA.

BLANK-BOOK.

SPECIFICATION forming part of Letters Patent No. 416,639, dated December 3, 1889.

Application filed November 8, 1888. Serial No. 290,303. (No model.)

To all whom it may concern:

Be it known that I, FENTON P. F. MULLINS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Blank-Books; and I do hereby declare that the following is a full, clear, and exact description of the invention, reference being had to the accompanying drawings.

This invention has relation to blank-books or books of account, and has for its object the provision of novel means whereby, when the same are opened for use and at whatever page, whether in the center or near either end of the book, the leaves will lie perfectly flat throughout their entire area, thereby permitting of the easy employment of the entire page, from the outer to the inner edge and to center or joint of the same. This result has been attained heretofore in various ways—for instance, by the use of a spiral spring with chains and bolts or screws, which have been found unreliable, owing to breakage of the chains and the pulling out of the bolts on account of their being fastened to the covers, which are of soft material, such as pasteboard; also, in a peculiar manner of stitching and the use of heavy pasteboard for the backs, which, after use for awhile, allows the center of the book to fall, and thus obviates the possibility of attaining the desired end.

This invention consists in the provision of the following means: The back, or portion which connects the covers of the book, is made of two long and narrow pieces of pasteboard curved to the desired shape between which are interposed steel or other metallic springs of corresponding curvature and tempered, so that they will always maintain the same degree of resiliency. The spaces between the springs, of which there may be any number, are filled with glue, and the whole is then covered with muslin, after which the finish of leather is fastened to the outer surface of the back. If found to be desirable, I may use a single spring of the same length and contour as the back of the book and secured in the same manner as the several sections, which will serve the same purpose; also, it might be desirable to dispense with the strips of pasteboard, and merely use a single spring of suit-

able length and width and covered with muslin or thin leather or the like, and flexibly attach the same to the book-covers.

Referring to the accompanying drawings, Figure 1 is a perspective view of book when opened in the center. Fig. 2 is an edge view of same, showing position of back when book is opened near the front. Fig. 3 is a perspective view of back, one portion of same being broken away. Fig. 4 is a transverse vertical section of back. Fig. 5 is a perspective view of short spring, and Fig. 6 is a perspective view of long spring.

A represents a book made according to my invention, and *a a* are the leaves of same, which, as shown, lie perfectly flat throughout their entire area. Leaves *a a* are secured to each other at their inner edges by sewing and pasting to a thin strip of leather between lids or covers *b b*, to which they are secured by strips of muslin or other flexible material in the usual manner.

B is the back, which is composed of two curved pieces *b' b'*, of pasteboard or other material, between which are secured short sections C of tempered-steel springs, made to correspond with the curvature of the pieces *b'*. In the drawings I have shown the use of three, although any other desired spring-sections may be employed if found necessary. The spaces between these springs are filled with glue or other adhesive material, which serves to keep the two pieces *b'* together, and at the same time, after hardening, keeps the sections of springs in place.

In lieu of springs C, I may prefer to use a single spring D, which is of the same length and curvature as back B and serves the same purpose as the shorter sections.

When the springs are in place, as above described, the whole is covered with a piece of muslin in the ordinary manner, to which is attached the usual finish of leather. These springs will retain their original shape and degree of resiliency notwithstanding long and rough usage, and their efficiency will not be in any way impaired by such use, always keeping the inner edges of the book-covers sufficiently close together to throw the center or point of union of the leaves of the book up to the flat position above described when the same is open for use, by reason of

the fact that the distance between the inner edges of the book-covers when in such position is less than the extent of the curve of the inner edges of the leaves. Said springs
 5 will also permit of the use of very light pasteboard in the backs in place of the very heavy board now in use. I may also prefer to use a single piece of pasteboard instead of two pieces. In such case I would place the
 10 springs on the outside or convex surface of the board and cover the whole with glue and muslin to keep the springs in place.

When the book is in process of opening, springs C will yield slightly to the distending pressure on the back B, and when the
 15 same has been opened to its full extent said springs will draw the inner edges of covers *b' b'* toward each other, and thereby cause the inner edges of the leaves *a* to spring
 20 into position shown in Fig. 1, for the reason above stated, thus making the center of the book the highest point instead of the lowest, and the leaves lie flat instead of curved. When the book is opened at any other place,
 25 the effect will be the same as shown in Fig. 2, the leaves always opening flat no matter at what point the book is opened. When the book is being closed, springs C will distend sufficiently for the inner edges of the leaves
 30 to spring back into their normal position and resume a shape corresponding with the curvature of the back.

While I have shown and described steel springs, I do not confine myself to springs of

this character, as any other metallic spring 35 may be used to the same advantage.

I am aware that curved springs of metal with their edges in contact with the leaves, in order to exert a clamping action on said leaves and secure them in place between the
 40 lids of a removable cover or temporary binder, have been heretofore used, and I do not wish to be understood as claiming such use.

Having thus fully described my invention, what I claim as my invention is— 45

1. A back for a book, consisting of a curved metallic spring or springs secured within a suitable covering and flexibly secured to the book cover and leaves in such manner that the edges of the spring or springs will be in-
 50 dependent of and out of contact with said leaves, substantially as shown and described.

2. The combination, with the cover of a book, of the back B, flexibly secured to said covers and the leaves, and consisting of the
 55 curved strips *b' b'*, of pasteboard or other flexible material, a similarly-curved metallic spring or springs secured between said strips by gluing or otherwise, and the muslin or like covering *c* for said strips, substantially as
 60 shown and described.

Signed at Philadelphia, Pennsylvania, this 15th day of October, A. D. 1888.

FENTON P. F. MULLINS.

Witnesses:

R. DALE SPARHAWK,
 WILLIAM H. POWELL.