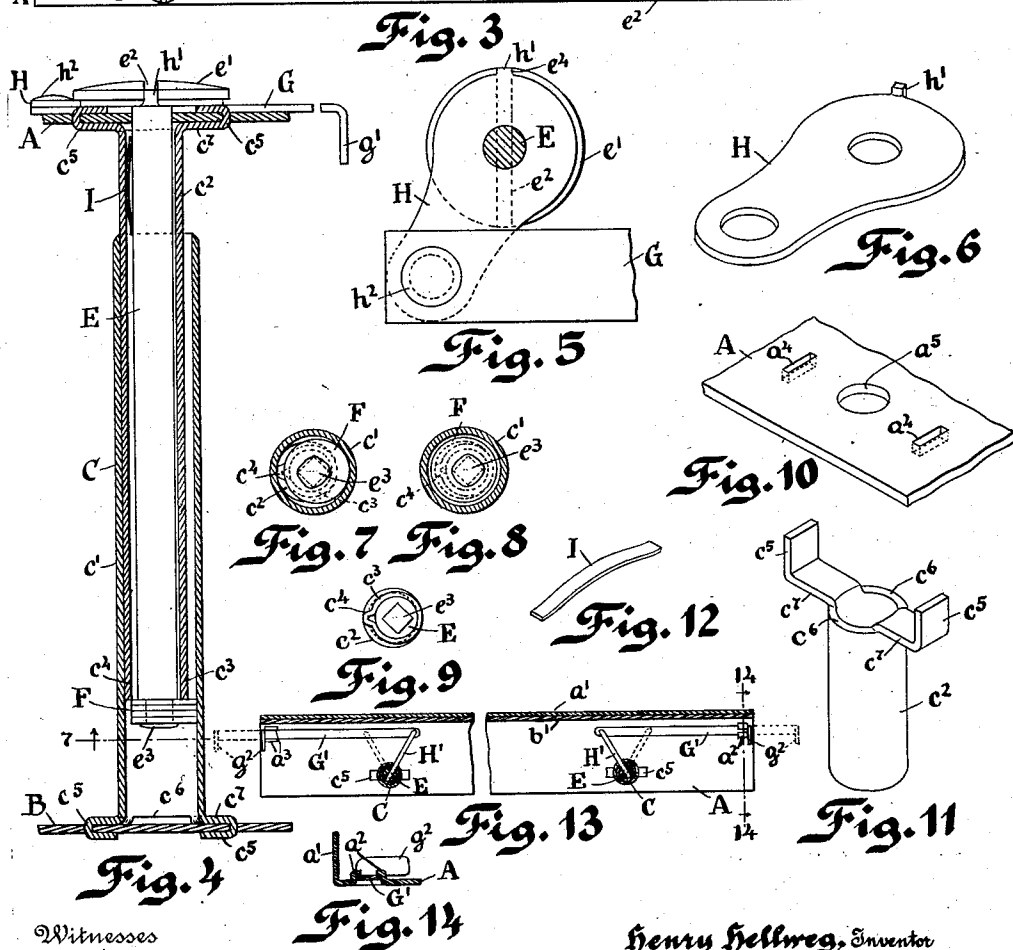
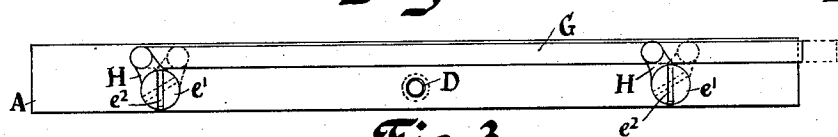


1,009,412.

Fig. 1 is a side view of a mechanical assembly. It features a horizontal frame with top rail A and bottom rail B. A central vertical roller C is mounted on the frame. The roller C has a central shaft with a nut e' and a cap e'. The roller is supported by a bracket D. The frame is labeled with various points: a' at the top left, c' on the roller, c⁵ at the bottom left, and b' at the bottom right. A horizontal line G is shown above the roller. The roller is also labeled with h² and e² at the top. Fig. 2 is a cross-sectional view of the roller C. It shows the internal components: a central shaft with a nut e' and a cap e'. The roller is supported by a bracket D. The frame is labeled with various points: a' at the top left, c' on the roller, c⁵ at the bottom left, and b' at the bottom right. A horizontal line G is shown above the roller. The roller is also labeled with h² and e² at the top.



Witnesses

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UNITED STATES PATENT OFFICE.

HENRY HELLWEG, OF MILWAUKEE, WISCONSIN.

LOOSE-LEAF BINDER.

1,009,412.

Specification of Letters Patent.

Patented Nov. 21, 1911.

Application filed February 11, 1911. Serial No. 608,085.

To all whom it may concern:

Be it known that I, HENRY HELLWEG, of Milwaukee, Wisconsin, have invented a Loose-Leaf Binder, of which the following is a specification.

This invention relates to loose-leaf binders of the telescoping type, in which a pair of back-plates, which may or may not be made with angular extensions covering the back edge of the book, are held together in variable relation by means of a plurality of telescopic posts, said posts being made in two sections one of which slides within the other, and is provided with means for securing it thereto in any desired position of extension.

It is the object of my invention to provide a novel, cheap and effective means for securing or clamping the two telescoping-sections of the binder-post together, and means which will enable this to be done by the least amount of effort or manipulation on the part of the operator.

It is further the object of the invention to provide a novel and improved means for securing the post-sections to the back-plates of the binder, which shall be both simpler and stronger than the methods heretofore practiced.

My invention comprises as one of its principal features an eccentric sheave mounted eccentrically on the end of the center-rod or shaft which turns within the inner binder-post section, in conjunction with means on the outer end of said shaft for rotating it through a certain angle, sufficient to make said eccentric sheave frictionally clamp or release the outer section of the binder-post.

Another feature of the invention is the means I provide for rotating the aforesaid shaft through the desired angle by means of a simple pull-rod at the end of the binder-plate.

Another feature of my invention consists in forming upon the ends of each post-section two opposite tabs of metal, which are bent outwardly to form a base for the post-section, and thence at right angles through rectangular slots in the binder-plates, and thence are turned over or clenched upon the outer side of the binder-plate, forming a cheap, rigid and substantial joint.

For the better understanding of my invention I have illustrated the same in the accompanying drawings, wherein—

Figure 1 is a face-view from the inner side

of the metal portions of the binder-back constructed in accordance with my invention, the pasteboard-filling and cloth-covering being omitted; Fig. 2 is a side elevation of the same from the right; Fig. 3 is a plan-view of the same; Fig. 4 is a longitudinal section of a portion of the same through the axis of one of the binder-posts on a magnified scale, the central shaft and eccentric being shown in elevation; Fig. 5 is a plan-section on the inner surface of one of the cranks, from the lower side; Fig. 6 is a perspective view of the crank; Fig. 7 is a transverse sectional view on the plane 7 of Fig. 4, looking upwardly, with the eccentric in clamping position; Fig. 8 is a similar view with the eccentric in the released position; Fig. 9 is an end view of the inner post-section and shaft with the eccentric sheave removed; Fig. 10 is a fragmentary perspective view of a portion of the binder-back plate immediately adjacent to the post; Fig. 11 is a perspective view of the end of the post-section ready for insertion into the slots of Fig. 10; Fig. 12 is a perspective view of the friction-spring; Fig. 13 is a longitudinal plan-section, looking up, through a binder-back constructed according to an alternative plan; and Fig. 14 is a transverse-section on the plane 14 thereof, and on a larger scale.

The reference letters refer each to the same part in each figure of the drawings.

The principal elements of the binder-back as shown are the upper and lower back-plates A and B, which may or may not have angular telescopic extensions a' , b' , a pair of telescopic binder-posts C comprising outer and inner sections c' and c'' ; and the third post D, not essential to the invention, but used merely for the purpose of limiting the extension of the back-plates in preventing the telescopic-sections from being pulled apart. The post-sections are, as customarily, made of metal tubing, and are secured in upstanding position to the back-plates in a manner hereinafter described.

The clamping-means comprises, first, a rod or shaft E, which turns inside of the bore of the inner post-section c'' , and is slightly smaller in diameter, generally by about $\frac{1}{16}$ to $\frac{1}{32}$ of an inch; secondly, a head e' on the outer end thereof which may be slotted as shown at e'' to facilitate the turning of the shaft by means of a coin or screw-driver; and thirdly, an eccentric sheave F on the lower end of the shaft E. The said

sheave is preferably built up from sheet-metal stampings, each of the same diameter, and having a rectangular hole eccentrically punched therein to receive the squared end e^3 of the post E, which projects below the end of the post-section c^2 , and after insertion into all of the plates F is riveted or clenched thereover, so as to hold them in place. The lower end of the shaft E is also maintained in eccentric relation to the post-section c^2 by the means illustrated in Fig. 9; to wit, the lower end of said post-section is drawn down by suitable dies to a smaller diameter c^3 closely enveloping the shaft E, and forming a bearing therefor, the surplus metal being disposed in the form of a crimp c^4 on one side of the post-section. Exactly how far up the post the crimp extends is quite immaterial, and is therefore not shown in the drawing. This will give the bearing of the lower end of the post-section E an eccentricity approximately equal to that of the sheave F; so that when turned into one position, shown in Fig. 8, the center of the latter coincides substantially with the axis of the post-section, and the latter will be free to slide within the outer post-section c' ; but when turned from this position through an angle of 180 degrees or less, one side of the sheave F will project and will come into frictional engagement with the bore of the post-section c' , thereby holding the section c^2 clamped thereto (Fig. 7.) This clamping and releasing-action is preferably made to require only an angle of about 60 degrees rotation to accomplish it effectively where it is desired to provide an additional improvement in the form of a pull-rod G, which extends longitudinally of the binder-back and is operatively connected to the shafts E through the medium of a pair of cranks H. The mechanical construction of the cranks H may be as shown in Figs. 5 and 6, being placed immediately under the heads e' of the shafts, and being provided with upstanding snugs h' on their edge, which engage in recesses e^4 in the edge of the heads e' . The cranks are pivotally connected to the pull-rod by rivets h^2 on their free ends.

As an alternative to this construction which may be preferable in some instances, I may provide that shown in Figs. 13 and 14, in which, in place of the single pull-rod G, I may provide two independent pull-rods G' , each connected separately to the end of a pin H' , which is fixed in a diametral hole in the shaft H and acts as a crank; said rods H' being in this case located on the under side of the back-plate as shown, and said pins H' working in the arcuate space between the two tabs c^5 , by which the post is secured to the back-plate as hereinafter described. The ends of the rods G' are provided with finger-tabs g^2 , and they are

guided in their longitudinal movement by any desired means, as illustrated by a pair of ears a^2 or a^3 , turned up on the opposite sides of the rod, and which may partially overlie it, as at a^2 , or not as at a^3 , and in the latter case it will be understood of course that the rod G' is confined in place by the pasteboard filling of the binder-back. The inner ends of the rods G' will, of course, be guided in the arc of a circle described by the ends of the pins H' .

The means for securing the post-sections to the back-plates are especially illustrated in Figs. 4, 10 and 11. On the end of each post I file or cut away a portion of the metal, so as to leave two upstanding tabs c^5 separated by blank spaces c^6 . The tabs c^5 are subsequently bent outwardly at right angles to the axis of the post, as shown at c^7 , and their ends then turned upwardly as shown in Fig. 11, in a position to enter two rectangular slots a^4 in the back-plate. After insertion in these slots, the ends of the tabs c^5 are then turned over to clench them as shown in Fig. 4. The circular hole a^3 of Fig. 10 forms a bearing for the shaft E, and is not necessary on the lower back-plate B. This means of securing the post is much superior to that heretofore used, as it entirely eliminates the use of washers and reinforcements, and at the same time is not only cheaper, but stronger inasmuch as it gives the post a wider base, and in so far prevents the bending of the binder-plates due to side-wrench upon the posts.

In order that the eccentric F may not be shifted accidentally into clamping position when released, I prefer to provide a small plate-spring I, which is inserted between the shaft E and the bore of the post-section c^2 , and which provides the necessary friction of movement.

From the above description it will be readily understood that my invention is not limited to special forms and mechanical constructions such as I have hereinabove shown by way of illustration, but that the principles thereof are expressible in a variety of ways as will be well understood by those skilled in the art; therefore the scope of my claims is to be interpreted in view of such alternative construction.

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

1. Clamping-means for a telescopic binder-post comprising, in combination with the post-sections, a shaft rotatably mounted in the inner tubular post-section, and a sheave eccentrically mounted on the lower end thereof, beyond the end of said post-section; the end of said post-section being eccentrically compressed to form an eccentric bearing for said shaft.

2. Clamping-means for a telescopic binder-

post comprising, in combination with the post-sections, a shaft rotatably mounted in the inner tubular post-section, and a sheave eccentrically mounted on the lower end thereof, beyond the end of said post-section; the end of said post-section being drawn into a circular eccentric bearing for the shaft, having a crimp on one side.

3. In a loose-leaf binder, a telescopic post consisting of inner and outer telescopic tubular sections, clamping-means for securing the two sections together, a shaft rotatably mounted in one of said sections and operating said clamping means, and a friction-spring consisting of a bent metal strip inserted between said shaft and the post-section in which it rotates.

4. In a loose-leaf binder, the combination of a telescopic post consisting of inner and outer telescopic post-sections, a shaft rotatably mounted within the inner post-section and of somewhat smaller diameter than the bore thereof, the lower end of said shaft being guided in an eccentric bearing with respect to said inner post-section, an eccentric sheave mounted on the lower end of said shaft, means for rotating said shaft from the outside, and a friction-device comprising a strip of resilient sheet-metal inserted between said shaft and the inner post-section.

5. In a loose-leaf binder, the combination of a pair of back-plates, a telescopic post adjustably securing them in extensible relation, said post comprising inner and outer telescopic tubular post-sections, a shaft rotatably mounted within the inner post-section and of smaller diameter than the bore thereof, the lower end of said inner post-section being eccentrically crimped, so as to form an eccentric journal for said shaft, a sheave eccentrically mounted on the lower

end of said shaft beyond the end of said post, and a longitudinal pull-rod operatively connected to the upper end of said shaft so as by longitudinal reciprocation to rotate said shaft.

6. In a loose-leaf binder, the combination of a pair of back-plates, a telescopic-post adjustably securing them in extensible relation, said post comprising inner and outer telescopic tubular post-sections, a shaft rotatably mounted within the inner post-section, and of smaller diameter than the bore thereof, the lower end of said inner post-section being eccentrically crimped, so as to form an eccentric journal for said shaft, a sheave eccentrically mounted on the lower end of said shaft beyond the end of said post, a crank mounted on said shaft adjacent to the back-plate, and a longitudinal pull-rod extending longitudinally of the binder and adapted to reciprocate and connected to said crank, whereby the latter is rotated by reciprocating said rod.

7. In a loose-leaf binder, means for securing a tubular post-section to a binder-back, comprising a pair of diametrically opposite tabs formed on the end of the post-section, said tabs being bent outwardly at right angles to the axis of the post-section, and the ends thereof being bent upwardly parallel to the axis of the post-section, the binder-back being provided with a pair of slots registering with the parallel ends of said tabs and through which they are inserted; the end of said tabs being subsequently clenched on the outer face of the back-plate.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

HENRY HELLWEG.

Witnesses:

LOUIS ROOS,
M. A. FREDRICH.