Sept. 3, 1929. H. W. JULIUS 1,727,108

LOOSE LEAF BINDER

Filed Nov. 30, 1928

Fig. 1.

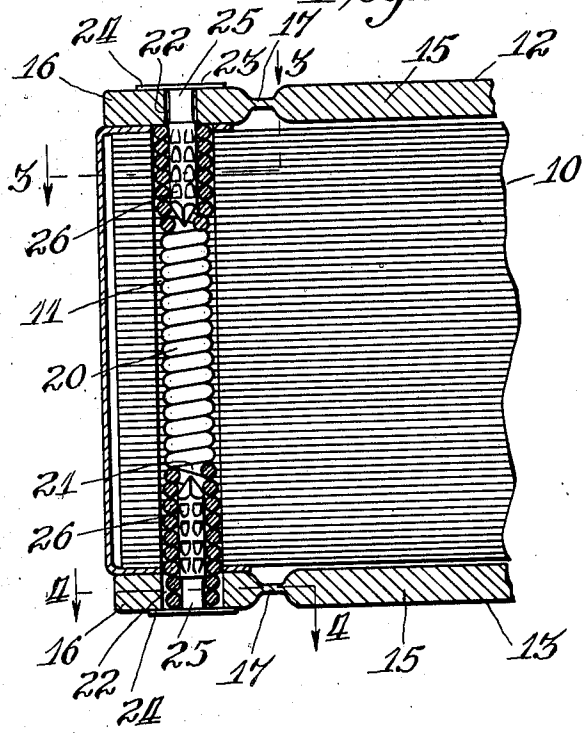


Fig. 2.

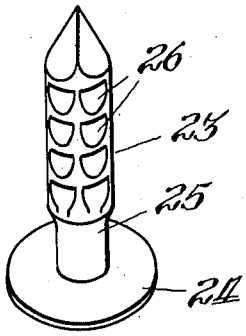


Fig. 3.

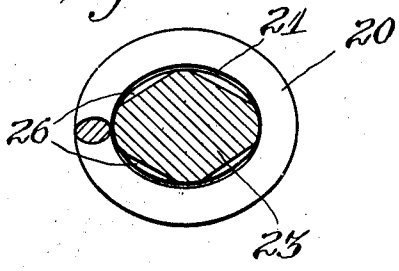
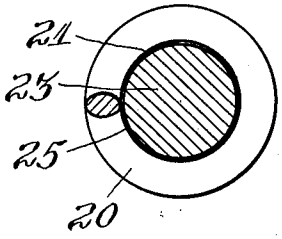


Fig. 4.



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UNITED STATES PATENT OFFICE.

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LOOSE-LEAF BINDER.

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The present invention has to do with the binding of loose sheets and relates particularly to the binding of such sheets in a book, having a coil spring as the binding post.

The objects of the invention include, among others, the following:

An improved means for attaching a binding post to a binder.

An improved means for providing an end section upon a binding post.

Unique means for associating a binding post with the ends or cap member therefor.

Means for availing the flexibility and resiliency of a coil spring binding post for the purpose of securing thereto an end member.

A unique binding post.

An end member adapted to be secured to a binding post by friction and possessing improved means for effecting a secure joinder therebetween.

These, and such other objects as may hereinafter appear, are obtained by the construction of parts, combination of elements, and arrangement of the structural members of the device forming the subject matter of this application.

Only one form of the invention is illustrated in the accompanying single sheet of drawing, and in said drawing.

Figure 1 is a vertical section through a binder, the ends of the binding post being broken away to show different details of structure;

Figure 2 is a perspective view of one of the end members which is employed in the present device;

Figure 3 is a transverse section of the post on the line 3—3 of Figure 1; and

Figure 4 is a transverse section of the post on the line 4—4 of Figure 1.

Like reference characters are used to designate similar parts in the drawing and in the description of the invention hereinafter given.

At the present time when loose-leaf binding is so popular and so highly efficient, many firms are adopting plans for the keeping of correspondence in which they employ what may be termed a loose-leaf binder. Naturally, these binders must be of relatively low cost, sturdy, easily put together, of good mechanical structure, and not prone to pull apart.

The present binder is particularly adapted to be employed for binding of stacks of single sheets. Such sheets are first aligned whereby a flat edge is provided against which the binder parts are adapted to be aligned. This edge will be considered as the back of the bound file.

Such a file is illustrated in Figure 1 where it is designated by the numeral 10. Perforations are made through such file of sheets, these being marked 11.

To bind this sheaf of sheets, a top and a bottom member or binder, called covers, are provided. The top cover is designated 12 and the bottom cover 13.

Each of these members comprises a main body portion, and a binding section, there being a hinge therebetween, the body being designated 15, the binding section 16, and the hinge 17.

Through the covers and particularly the binding sections thereof 16, perforations are provided.

Coil-spring binders such as are herein described may be attached to covers 12 and 13 in two ways, the difference being whether there are small perforations, or large perforations, through the binding section 16.

In the event that there are small perforations through the binding section 16, a stud hereinafter to be described, (see Figure 2), is driven through the binder and into the center of the coil spring. If a large perforation, namely, one such as would permit the entire body of the spring to be inserted thereinto, is used, the stud is driven into the spring binding post much deeper than otherwise, and so that the head of the stud at its under surface is adapted to impinge the end of the coil spring.

For purposes of illustration, the binder shown in Figure 1 shows both forms of connection, one form at the top and the other at the bottom.

The coil spring which comprises the binding post is designated 20, and it comprises a plurality of convolutions of wire of considerable thickness whereby sufficient strength is obtained. Through the center of such post is an axial aperture, and which is designated by the numeral 21. The shank 25 adjacent the head 24 is not barbed for a number of reasons to be later explained.

At the top (Figure 1) the apertures 22 are of less diameter than the parts 20 and only sufficiently large to admit the point of a stud 23, which stud comprises a head 24, and a shank 25 having a swedged barbed portion 26. The aperture 22 in the top cover 12 may be so small that it does not freely receive the shank 25 of the stud 23, making it necessary to drive the stud therethrough against severe frictional resistance.

The lower cover 12 is attached to the spring or binding post 20 by a similar stud 23.

As will be noticed, the spring 20 passes through lower section 16 and extends to the under surface of stud head 24, the stud 23 being driven into the part 20 substantially its full length.

In either instance, the spring part 20 comes into contact with the swedged barbed section 26 upon the stud 23 and there is a frictional joinder between the stud 23 and the spring 24 brought about in the following manner:

The swedged barbs 26 are either regular or irregular projections obtained in a nail swedging barbing machine, and in which the machine is so set that concurrently upon the pressing of the barbs therein, the shank 25 of the stud 23 is deformed until it becomes elliptical, that is, somewhat flattened. Its diameter in one direction is perceptibly less than its diameter in a direction 90 degrees thereto. The swedged barbs whether regular or irregularly arranged may be in series,—for example, in three or four rows.

The larger diameter of the stud 23 is greater than the diameter of the aperture 21 in post 20, while the lesser diameter of the stud 23 is slightly less than the diameter of the post 20.

When the stud 23 is driven into the post 20, it forces the convolutions of the spring 20 into distorted arrangement, that is, instead of being truly round or circular, some of the convolutions become elliptical because the material of the stud 23 is sufficiently hard that it will not be seriously deformed during the driving of the stud 23 into part 20. In inserted position, the projecting barbs 26 prevent rotation of the stud 23 in any direction and, of course, prevent its removal from the post 20 except by employing powerful pulling means.

The portion of the shank 25 between the head 24 and the swedged barbed section 26 is not necessarily deformed by the barbing machine but may remain truly circular. This permits the convolution of the post 20 above the barbed section 26 to resume their normal position after the stud has been driven thereinto, the barbed portion 26 being several convolutions below the extremity of the spring 20 as is shown in the lower part of Figure 1. This is added insurance against the removal of the stud 23 from the spring 20 for there is a frictional resistance to such removal brought about by this arrangement which, under all normal circumstances, prevents the removal of the stud 23.

I claim:

1. In a binding post normally possessing a cross-section comprising a definite geometrical figure, an end member adapted to be inserted thereinto and to deform said binding post so that in cross section it assumes a different geometrical configuration.

2. In a binding post comprising a coiled member normally circular in transverse cross-section, an end member adapted to deform a plurality of the convolutions thereof so that in cross-section they cease to be circular.

3. In a binding post, comprising a coiled spring normally circular in cross-section, an end member having peripheral projections adapted to deform convolutions of said spring so that they are no longer circular in such section.

4. For use in binding books, a binding post comprising a resilient member having an opening therein and normally circular in cross-section, and an end member adapted to be inserted into said opening to deform said binding post whereby it assumes an elliptical cross-section to provide frictional engagement between said post and said end member.

5. For use in binding books, a binding post comprising a coil spring having an axial opening therein and normally circular in transverse section, and an end member having peripheral projections and adapted to be inserted into said opening, said projections being adapted to deform said binding post to an elliptical cross-section to provide frictional engagement between said post and said end member.

6. For use in binding books, a binding post comprising a coil spring having an axial opening therein, and a member adapted to be inserted into said opening to deform said binding post to provide frictional engagement between said post and said end member, said end member having a diameter in one direction greater than said axial opening and in another direction a diameter less than the diameter of said openings.

7. A binding post for use with a loose-leaf binder comprising a resilient hollow binding post, and a stud adapted to be driven thereinto, said stud comprising a shank, having a projecting portion whereby to modify geometrically the configuration of the hollow section of said binding post to increase the friction between said post and said stud.

8. A binding post for use with a loose-leaf binder comprising a resilient hollow binding post, and a stud adapted to be driven thereinto, said stud comprising a shank, and a

barbed portion, the barbed portion being deformed to have a diameter greater in one direction than in another.

9. A binding post for use with a loose-leaf binder comprising a resilient hollow binding post, and a stud adapted to be driven thereinto, said stud comprising a shank, and a barbed portion, the barbed portion being deformed to have a greater diameter in one direction than the opening in said binding post so that the form of the body of said post is modified by the insertion of the stud into the hollow portion thereof.

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