

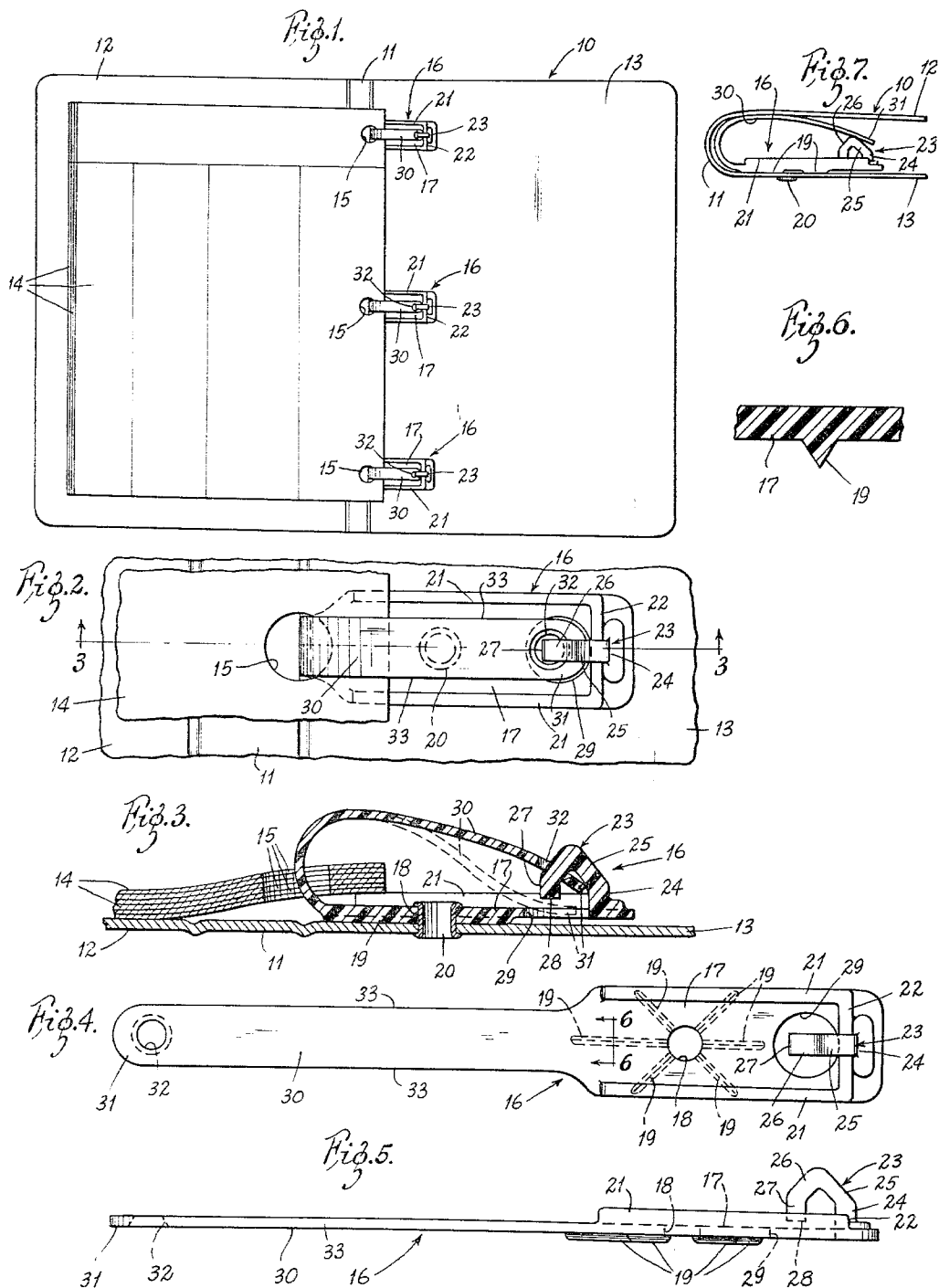
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SNAP RING FOR LOOSE-LEAF BINDER

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1

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## SNAP RING FOR LOOSE-LEAF BINDER

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1 Claim. (Cl. 129—1)

This invention relates to a snap ring for a loose-leaf binder and particularly to a plastic snap ring.

In general, the invention comprises a molded snap ring of nylon or other plastic material that may or may not be reinforced. The snap ring has a base, a hook end and a ring strip extending from the base opposite the hook end. There is a hole through the base permitting it to be riveted to the side of a binder. The snap ring is preferably injection molded in the flat condition. However, the material is thin, and the ring portion can be bent in a curvature until its free end, which has a hole through it, is engaged with the hook end of the snap ring.

The principal object of this invention, therefore, is to provide a plastic snap ring that is easy to snap in a ring condition to hold notebook paper and the like, and that is easy to release from the ring condition.

Another object is to provide a snap ring as set forth in the previous paragraph, but that requires an external force to release it from the ringed condition so that papers will not unintentionally come loose.

Another object of the invention is to provide a plastic snap ring having a base with a hook at one end and a ring strip at the other end for contacting the hook to define a ring, with ribs on the base and on opposite sides of the hook to help keep the ring locked on the hook and to add rigidity to the base.

Still another object of the invention is to provide a plastic snap ring for loose-leaf binders that will not tear the sheets when they are locked in the binder by the ring. Additional objects are to provide such a plastic snap ring that permits the sheets to lie flat, that does not require a sheet lifter, that does not lose its shape in use, and that is not more expensive than the metal rings that are conventional.

Another object of the invention is to provide a plastic snap ring having a base, hook and ring that can be shipped with the ring strip curved over toward the hook. Thereafter, even when the ring strip is unhooked, it tends to remain in the curved over condition, even though it springs slightly away from the hook to permit easy insertion of papers.

Other objects and advantages will be apparent to those skilled in the art.

In the drawing:

FIGURE 1 is a plan view of the inside of an open loose-leaf binder that has the plastic snap ring of this invention;

FIGURE 2 is a fragmentary enlargement of a portion of FIGURE 1;

FIGURE 3 is a view in section taken along the line 3—3 of FIGURE 2;

FIGURE 4 is a plan view of an open snap ring before it is installed in the binder, the scale being about the same as that for FIGURE 2;

FIGURE 5 is a side elevation view of the snap ring of FIGURE 4;

FIGURE 6 is a still further enlarged view in section taken along the line 6—6 of FIGURE 4; and

FIGURE 7 is a fragmentary end view of the binder showing the condition of the snap rings when the binder is shipped.

Referring now to the drawing, FIGURE 1 shows a loose-leaf binder 10 having the usual end 11 and front

2

and back covers 12 and 13 used to hold sheets of paper 14. The sheets of paper 14 have two or three holes 15 in them, each of which receives one of the snap rings 16 of this invention.

This snap ring 16 is made of injection molded nylon plastic, or other similar plastic material. It has a base 17 with an eyelet hole 18 through the base. Shallow reinforcing ribs 19 radiate from the hole 18 on the underside of the base 17. These shallow ribs 19 both stiffen the base 17 and grip the back 13 of the binder to prevent the snap ring 16 from pivoting when it is fastened in place. FIGURE 3 illustrates a metal eyelet 20 to hold the snap rings 16 in place with the ribs 19 gripping the surface of the binder back 13. There are upstanding beads 21 on opposite sides of the base 17 and these beads 21 join an upstanding end bead 22.

A hook 23 extends upwardly at the center of the end bead 22. The hook 23 has a short vertical portion 24 extending from the base 17, followed by an inclined portion 25. A downwardly inclined portion 26 leads to another vertical portion 27, but the lower end 28 of the vertical portion 27 is spaced from the base 17. The base 17 has a hole 29 through it just below the free end 28 of the hook 23.

At the other end of the base 17 there is a ring strip 30 that is about 0.2 inch wide so that it will fit within the hole 15 in the notebook paper 14. The ring strip 30 has a free end 31 with a hole 32 that diverges by about 30° as illustrated in FIGURE 5. The end 31 of the ring strip 30 can fit within the hole 29 in the base 17.

The ring strip 30 is about .030 inch thick and it will readily flex over to the position illustrated in FIGURE 3. The free end of the strip 28 will fit beneath the lower end 28 of the hook portion 27 to permit that hook portion to project through the hole 32. The hole 29 in the base 17 makes it easier to get the ring strip 30 onto the hook 23. Once the hook is in the hole 32, the ring strip 30 tends to flex upwardly as illustrated in FIGURE 3. The diverging hole 32 in the ring strip makes it easy to locate the lower end of the hook while giving the hole 32 a minimum diameter to hold the hook. When the ring strip 30 is thus positioned, it bears against the portion 25 of the hook 23 since that portion is inclined at an angle parallel to the ring strip 30 and the plastic has a tendency to spring upwardly. The edges 33 of the ring strip 30 that are to contact the paper sheets 14 are rounded to reduce the possibility of tearing the paper.

The snap ring 16 is molded with the ring strip 30 extending away from the base 17, as illustrated in FIGURES 4 and 5. Once the snap ring is fastened to the binder 10, however, the covers 12 and 13 are folded over, as shown in FIGURE 7, and this is the condition in which the binder is shipped. When the covers are folded over, they bend the ring strip 30 over, as also shown in FIGURE 7. The several days that shipping and storage take are sufficient to produce a permanent set in the ring strip in this curved over position. When the front cover 12 is pivoted away from the back cover 13, the ring strip 30 springs slightly upwardly, spacing the end 31 about 1/4—1/2 inch from the hook 23, but the ring strip does not straighten out to its original position (of FIGURE 5).

In use the snap rings 16 are fastened to a loose-leaf binder 10 by metal eyelets 20. When the eyelets are made tight, the ribs 19 prevent the snap rings 16 from rotating. To add sheets of paper, the upper end 32 of the ring strip 30 is depressed (from the position viewed in FIGURE 3) until the ring strip 30 reaches the dotted line position at which it is free of the hook 23. Then the ring strip 30 is slid away from the hook 23 by the frictional contact between a finger and the ring strip 30 until the ring strip is free to spring upwardly. Then as many

sheets of paper 14 as desired are put on the ring strip 30 and the ring strips are swung around in just the reverse order of the foregoing until they are locked in place on the hooks 23.

Various changes and modifications may be made within the purview of this invention as will be readily apparent to those skilled in the art. Such changes and modifications are within the scope and teaching of this invention as defined by the claim appended thereto.

What is claimed is:

A snap ring comprising an elongated base, a hook projecting upwardly from one end of said base, said hook curving toward the other end of said base and having a free portion extending downwardly toward said base, a ring strip extending from said other end of said base and having a free end with a hole therethrough for receiving said hook, said base, hook and ring strip being formed of an integral single piece of resilient plastic material, said ring strip being sufficiently thin to be curved over said base until said hook is engageable in said hole, said ring strip being presprung from the curved-over position toward a straightened position for upward biasing against said hook, an opening through said base for receiving an eyelet, a plurality of ribs radiating outwardly from said opening and projecting downwardly from the underside of said base, the downwardly projecting ribs having narrow lower edges, a pair of upwardly projecting parallel beads positioned respectively along opposite side edges of

said base and on opposite sides of said hook and extending from said one end toward said other end a distance beyond the free end of said hook, said beads extending upwardly beyond the free end of said hook, said beads being spaced apart farther than the width of said ring strip for passing the ring strip therebetween.

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