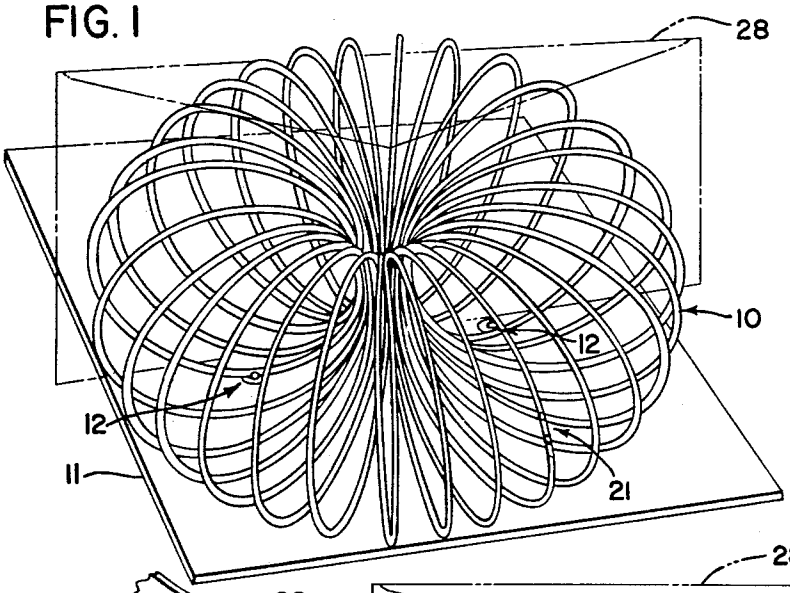
July 9, 1968 J. C. SWINGLE 3,391,794

EXPANDABLE RETAINER

Filed July 7, 1966

FIG. 1



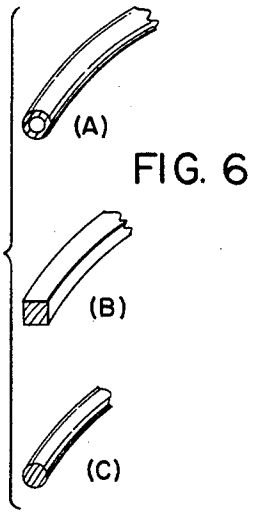


FIG. 6

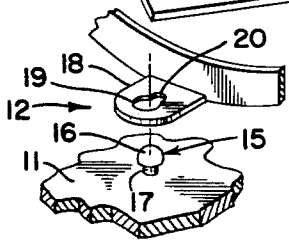


FIG. 4

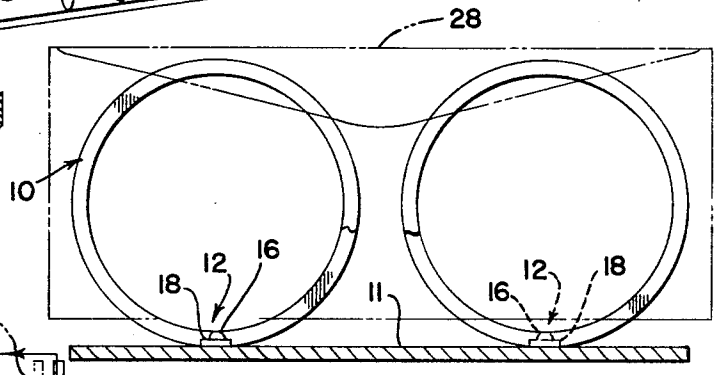


FIG. 3

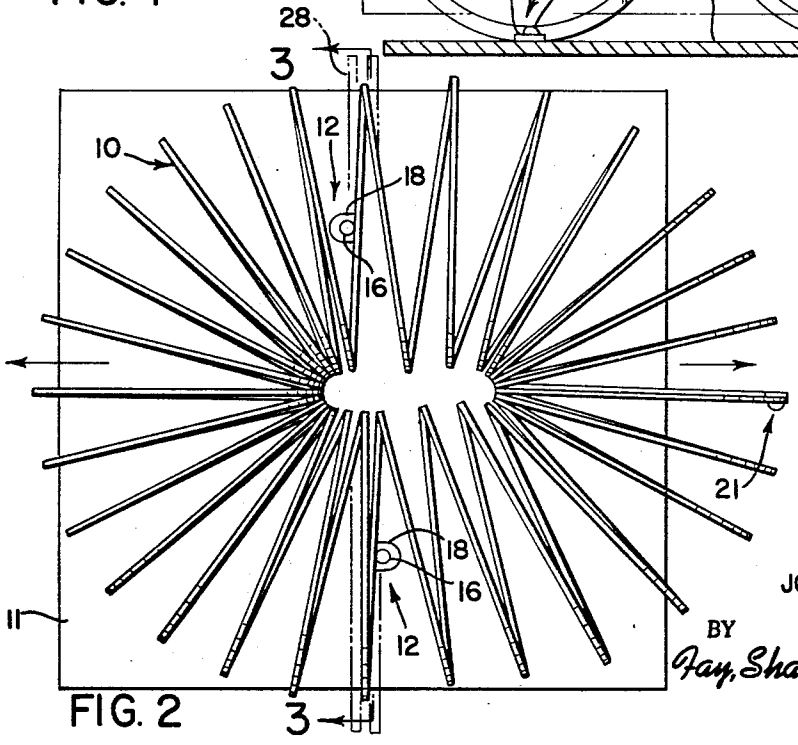


FIG. 2

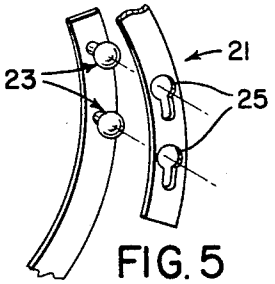


FIG. 5

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EXPANDABLE RETAINER

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8 Claims. (Cl. 211—120)

ABSTRACT OF THE DISCLOSURE

A letter or material holder made of a flexible resilient member in the form of a spiral and biased in a contracted position. Means are provided to secure the ends of the resilient member to allow it to expand and contract.

This invention relates to an expandable paper holder, and in particular, a paper holder comprised of a flexible resilient material. It is in the form of a spiral whose ends are connected so that its central axis forms a rounded, closed geometric figure which will expand upon the insertion of paper, such as magazines, letters and the like between the individual spirals and return to its original shape when the material is removed.

Magazine racks, letter holders, record holders and other flat object retainers, referred to hereinafter as material holders, usually have rigid configurations which enable them to accept only a given maximum quantity of material. When a large quantity of paper is desired to be placed in the holder, it usually must be stuffed in at odd angles and the result is an unsightly, inefficient retainer. This is a natural result since conventional letter holders cannot readily expand to accommodate additional material. Furthermore, some letter holders, if overweighted with material, will become unstable and subsequently fall and spill their contents. Usually these holders, also because of their rigidity have difficulty in grasping small quantities of material.

Other paper holders, while thay are not absolutely rigid, still have serious disadvantages. An example of such a paper holder is a combined paper weight and pen rack by I. W. Haysinger Patent No. 298,379. It generally consists of two or three stationary supports with a spiral wire secured therebetween. While a limited amount of flexibility is allowed within the spiral wire, it can only hold a limited volume of material since such material must fit between the stationary supports. That is, the total amount of available space is constant.

The A. S. Greenwood Patent No. 384,439, also shows a spiral mounted on a base, however, it is flattened against its base and securely fastened to it by means of numerous threads of fine wire or small staples. In order to insert something into the card rack, an individual rung is bent and the card inserted. Each spiral rung is essentially independent of the rest since no one rung cooperates with the others. It is clear from the disclosure and the drawings that it has only very limited expansion possibilities.

It would be desirable to have a material holder which would securely hold a single piece of material and yet have the capacity to expand and hold voluminous amounts of the same.

The present invention provides a material holder which will securely retain both a single sheet of paper as well as substantial amounts of material. It is very flexible in order that it may expand to accept material several times its own weight and volume. It is stable enough to hold voluminous material in an upright positon. It is resilient in order that it may return to its original size when the material is removed from it.

Structurally the present invention is formed of a spiral of resilient material with its ends connected, so that its axis forms a closed geometric shape. The spirals are

maintained perpendicular to their support. The innermost portions of the spiral abut each other so that a single paper may be securely held in place. As bulk papers are added to the holder, it simply expands due to its own inherent flexibility to accommodate the paper and yet securely hold it due to its natural resilience and tendency to return to its original shape.

Moreover, no matter what amount of material is inserted into the holder, it must always be placed, due to the inherent shape of the holder, parallel to the other paper. In this manner, there are always semi-circular portions at either end of the holder to support the paper therein.

FIG. 1 is a perspective view of the present invention.

FIG. 2 is a top view of FIG. 1.

FIG. 3 is a sectional view taken through 3—3 of FIG. 2.

FIG. 4 shows a method of securing the spiral to a base.

FIG. 5 shows the attaching means for the ends of the spiral.

FIG. 6 indicates cross sections of the material forming a spiral.

A spiral **10**, illustrated in FIG. 1, has a central axis which forms a closed, rounded geometric figure. In its contracted shape the figure is a circle. A base **11** supports the spiral **10** and is attached to it by a stud and bracket arrangement generally indicated as **12**. The spiral **10** may have rings with a tapered diameter or of different sizes when this is desired.

The stud and bracket arrangement **12** is shown more clearly in FIG. 4. A stud **15** has an enlarged stud head **16** and a narrower neck **17**. The bracket **18** has an opening **19** which is of a greater diameter than a second opening **20** and the stud head **16**. The second opening **20** is larger than the neck **17** but smaller than the head **16**. In operation the head **16** is simply inserted through the enlarged opening **19** and the neck **17** is slid into the opening **20**.

As observed from FIGS. 1 and 5 the spiral **10** has its ends attached at **21**. The means shown in FIG. 5 for attaching the ends is precisely the same as that shown in FIG. 4 for attaching the spiral **10** to the base **11**. That is, studs **23** having an enlarged head and a narrower neck portion fit into holes **25** having two sections, one large enough to receive the enlarged head, and the other smaller than the diameter of the enlarged head, but larger than the neck of the stud **23**.

It should be clear at this point that the method of attaching the spiral **10** to the base **11** and the method for attaching the ends of the spiral **10** are but one of an innumerable number. That is, the ends of the spiral **10** may be attached by any suitable means such as welding, soldering, clamps, wiring, etc. The same may be said with respect to the attachment of the spiral **10** to the base **11**. The method shown of doing so is merely by way of example. In fact, the spiral **10** operates perfectly without any base and may set loosely on any surface.

The reason for using the stud and hole for attaching the ends of the spiral **10** is to make it readily detachable so that the spiral may be collapsed and fold into a small package for either shipping or storage.

The characteristics of the spiral are such that if the ends are disconnected, it would collapse into a cylinder. That is, as shown, the spiral in FIG. 1 is in an expanded position and the natural tendency of the spiral is to contract.

This characteristic is important in the retention of smaller amounts of letters, magazines and other materials which are inserted into the holder.

As seen from FIGS. 1 and 2, if a single envelope **28** is inserted among the spirals **10**, the envelope must separate and thereby further expand a set of opposing indi-

vidual loops of the spiral **10**. Because of the expanded position of the spiral **10** and its tendency to return to its contracted position, it will push on the letter **28** from both sides and thereby securely hold it in place. As more material is added to the holder, the spiral **10** will simply expand in an outward direction as shown by the arrows in FIG. 2. All material which is added subsequently must be parallel to the envelope **28** since obviously other material cannot intersect it. In this manner, the outermost portions of the spiral **10** away from its supports **12** will remain in a generally semi-circular configuration which act as supports for the material contained in the holder. This is true regardless of whether the supports **12** and the base **11** are present or how much material is placed in the holder **10**. The resiliency of the paper holder **10** is such that it may expand to five or six times its closed diameter and still be stable.

FIG. 3 is a sectional taken along section **3**—**3** of FIG. 2. It shows the letter **28** secured by the spiral **10**. As explained above, the individual rungs of the spiral **10** due to their expanded position and natural resiliency and tendency to return to their unexpanded state securely hold the letter **28** in position.

FIG. 6 indicates three of the numerable cross-sections which are readily useable with the present invention for the spiral **10**. They are respectively shown as (A) tubular cross-section, (B) square cross-section, and (C) a circular cross-section. The material itself may be a metal, generally a steel or aluminum, but any material which has a natural resiliency such as plastics that are expandable and that do not readily reach their elastic limit is readily useable with the present invention.

For ease of description, the principles of the invention have been set forth in connection with but a single illustrated embodiment. It is not my intention that the illustrated embodiment nor the terminology employed in describing it be limiting inasmuch as variations in these may be made without departing from the spirit of the invention. Rather I desire to be restricted only by the scope of the appended claims.

I claim:

1. A material holder comprising an expanded flexible resilient member in the shape of a spiral whose central axis is a rounded, closed geometric figure and whose adjacent loops are contacting one another at their centermost points when in an unexpanded position, said loops being positioned in a direction perpendicular to their support and being free to radially expand so that they will support individual pieces of material, yet expand to accommodate further material while maintaining generally semicircular supports at either end of said paper holder and return to their original configuration when said material is removed.

2. The material holder of claim **1** wherein said rounded, closed geometric figure is a circle when no material is inserted in said material holder and when said holder is unrestrained.

3. The material holder of claim **2** wherein said spiral has a constant diameter.

4. The material holder of claim **3** wherein said material is composed of a resilient steel.

5. The material holder of claim **4** wherein the ends of said spiral are secured together.

6. The material holder of claim **5** wherein said ends of said spiral are connected by means of a stud and bracket.

7. The material holder of claim **6** wherein said spiral is attached to a base by means of a stud and bracket arrangement.

8. A material holder comprising:

a flexible, resilient member in the form of a spiral which is biased to a contracted position;

the individual loops of said spiral positioned perpendicular to a base on which the member rests, each loop generally abutting against its adjacent loop at a point along its periphery when in an unexpanded position; and

means for supporting the ends of said resilient member to allow for substantially unrestricted expansion of said member when material is placed between the loops of the resilient member and contraction when said material is removed.

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