

June 30, 1970

G. SIXT ET AL

3,517,854

SPRING BIASED FOLLOWER

Filed Jan. 10, 1968

2 Sheets-Sheet 1

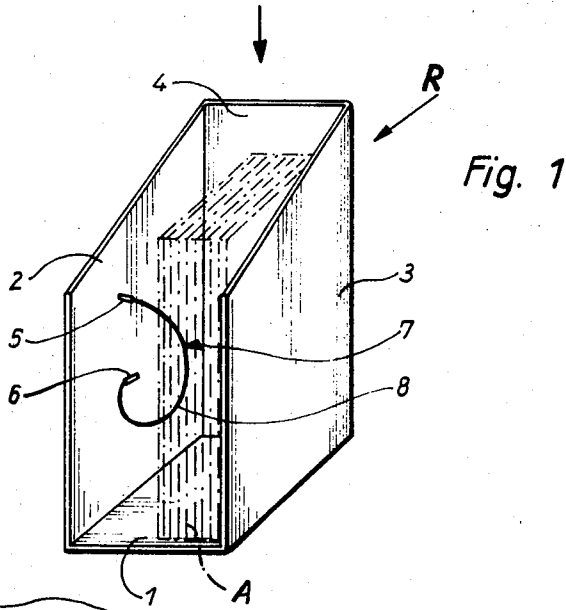


Fig. 1

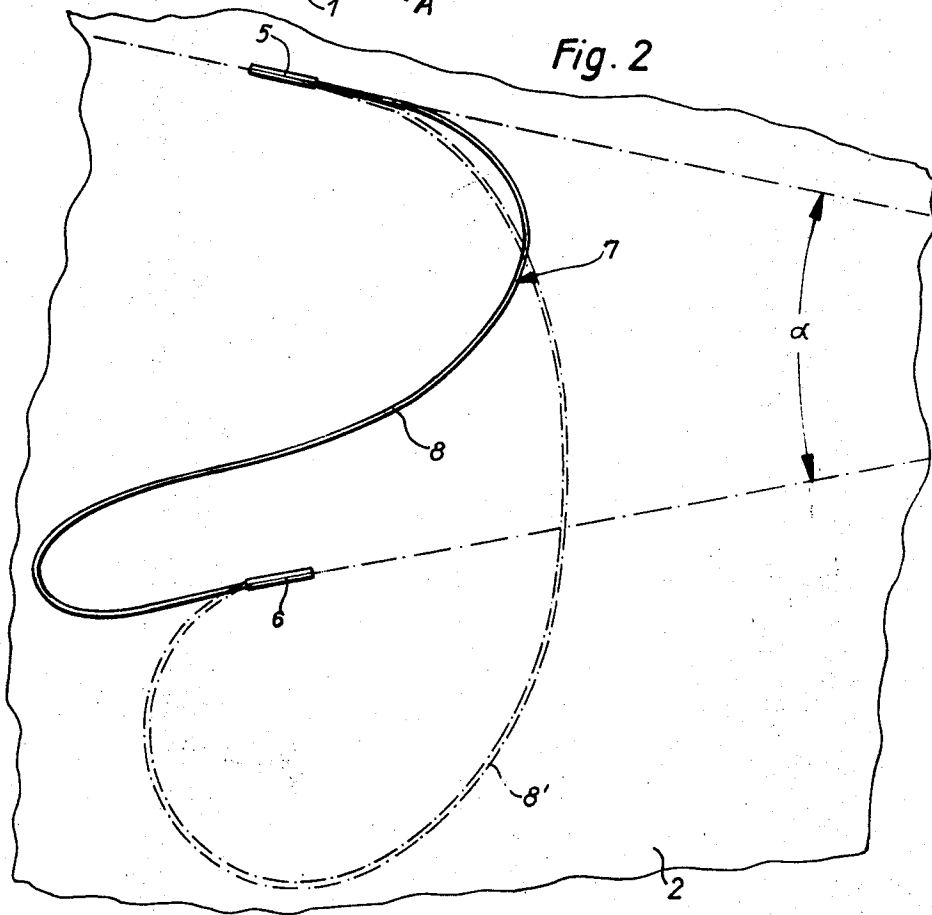


Fig. 2

Inventors
Gerhard Sixt
Eugen Ziegler
By Michael S. Striker
Attorney

June 30, 1970

G. SIXT ET AL

3,517,854

SPRING BIASED FOLLOWER

Filed Jan. 10, 1968

2 Sheets-Sheet 2

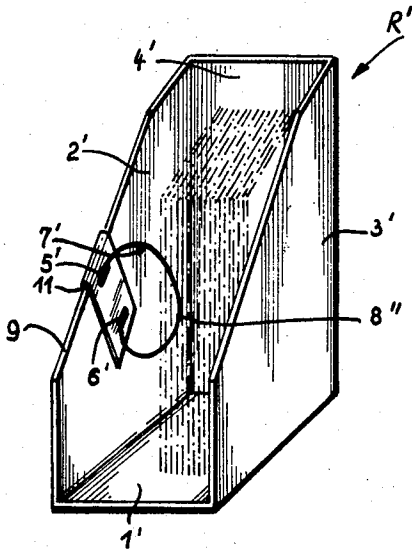
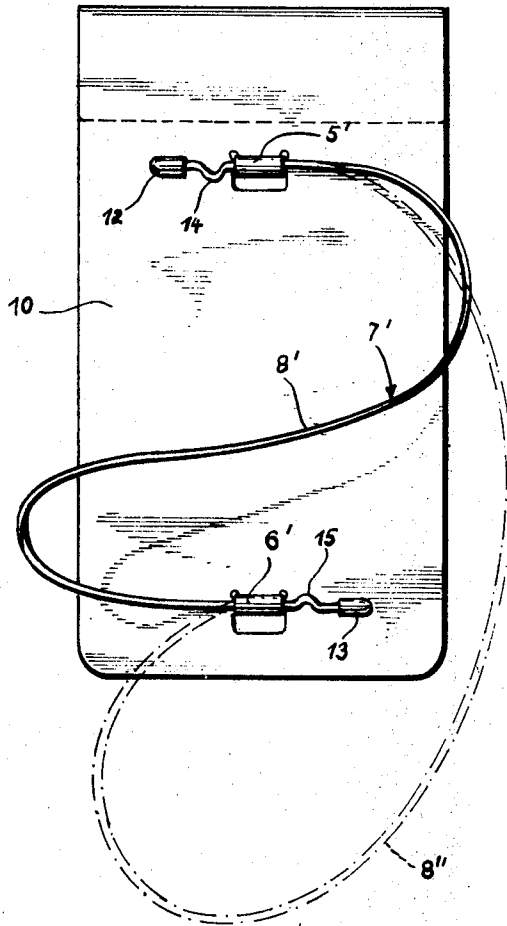


Fig. 3

Fig. 4



Inventor:
Gerhard Sixt
Eugen Ziegler
By *Linwood S. Strom*
Attorney

1

2

3,517,854

SPRING BIASED FOLLOWER

Gerhard Sixt, Schaffhausen, and Eugen Ziegler, Stuttgart-Feuerbach, Germany, assignors to Louis Leitz, Stuttgart-Feuerbach, Germany

Filed Jan. 10, 1968, Ser. No. 696,753

Claims priority, application Germany, Jan. 13, 1967,

L 55,495

Int. Cl. B65d 25/10

U.S. Cl. 220—93

10 Claims

ABSTRACT OF THE DISCLOSURE

A storing device for file cards which are to be stored in upright position. A receptacle defines an inner space which is bounded by two substantially parallel inner surfaces. An elongated spring wire has two end portions secured to one of the surfaces, and an intermediate portion which defines a convolution projecting from this one towards the other of the surfaces so as to be progressively elastically deflected towards the one surface as file cards are introduced into the inner space.

BACKGROUND OF THE INVENTION

The present invention relates to storing devices in general, and more particularly to storing devices for file cards and analogous articles which are to be stored in parallel side-by-side relationship.

File cards, file folders, and analogous articles are usually stored in upright position and in parallel side-by-side relationship. For this purpose receptacles are provided into which the articles, as they will here have to be referred to, are inserted and from which they can be withdrawn. However, the available space of such receptacles is frequently only partially filled by articles to be stored and this results in such articles moving out of their vertical or near-vertical desired position so that they lie or stand in the receptacle at an angle. This is not only undesirable from a point of view of appearance, but also and more importantly because prolonged positioning of the articles in this manner will lead to deformation by bending, which is undesirable, also it is of course undesirable that the articles should be loosely received in the receptacle, particularly if the receptacle is of the type which is adapted to be moved about so that articles may conceivably get into disarray during such movements or may, if the receptacle has an opening, even fall out.

Attempts have been made to overcome this problem by providing in such receptacles a spring consisting of a ribbon of spring steel having a generally U-shaped appearance, with the free ends of the legs of the U being slidably secured to one inner surface bounding the storage space of the receptacle so that articles received in the receptacle abut against the bight of the spring and are maintained in upright position as the spring becomes more and more deflected in the direction towards the aforementioned one surface in response to the introduction of additional articles into the receptacle. However, the area of contact of such springs with the articles to be engaged and maintained in upright position is relatively small, as is the extent to which the spring can be deflected, whereby the storage space available is of course limited.

It is a general object of the present invention to overcome these disadvantages.

A more particular object of the invention is to provide an improved retaining means in a storing device of the type set forth above.

A further object of the invention is to provide a storing device of this type wherein the area of contact and available storage space is significantly greater than is known from the art.

A concomitant object of the invention is to provide such a storing device wherein the manufacture of the retaining means is significantly simpler and less expensive than that of the retaining means known heretofore.

SUMMARY OF THE INVENTION

In accordance with one feature of our invention we provide a storing device, particularly a storing device suitable for file cards and analogous articles which are to be stored in parallel side-by-side relationship. Our novel storing device in accordance with this feature comprises a receptacle which defines an inner space bounded by two transversely spaced substantially parallel inner surfaces. Retaining means is provided for retaining the articles to be stored in the desired parallel side-by-side relationship, and such retaining means includes an elongated elastically retaining member having two spaced end portions which are secured to one of the aforementioned surfaces. An intermediate portion of the retaining means defines a convolution projecting from the one towards the other of the inner surfaces and is adapted to be progressively elastically deflected in the direction towards the aforementioned one surface in response to insertion between the intermediate portion and the other surface of articles which are to be stored. Thereby the intermediate portion acts to bias such articles towards the other surface and towards one another, maintaining them in the desired parallel side-by-side relationship.

With our novel storing device herein disclosed we obtain a considerably improved area of contact between the retaining means and the articles to be stored.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a storing device according to the present invention and comprising a retaining means according to the present invention;

FIG. 2 is a fragmentary elevational view on an enlarged scale of that inner surface of the storing device of FIG. 1 on which the retaining means is provided;

FIG. 3 is a view similar to FIG. 1, but illustrating a further embodiment of the invention; and

FIG. 4 is a front-elevational view on an enlarged scale of the retaining means used in the embodiment of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Discussing now the drawing in detail, and firstly FIGS. 1 and 2 thereof, it will be seen that the storing device illustrated therein comprises a receptacle R having a bottom wall 1, two upright side walls 2 and 3 which are spaced transversely from one another, and a rear wall 4 which extends upwardly from the bottom wall 1 and connects the side walls 2 and 3. A pair of sleeve-shaped members 5 and 6 are secured in suitable manner to the inner surface of the side wall 2, as illustrated in FIG. 1, and it will be seen that the sleeve 6 is located approximately under the sleeve 5 and that they are inclined to one another so that their respective axes define with one another an acute angle α (compare FIG. 2). An elongated elastic retaining member is identified with reference numeral 7 and will usually consist of a spring-steel wire although the use of other material for this purpose is not to be precluded. It will be seen that the respective spaced end portions of this member 7 are

3

received in the sleeves 5 and 6 in which they are turnable, whereas the intermediate portion of the member 7 defines a helical convolution. FIG. 1 shows in phantom lines a plurality of articles A, such as file cards, file folders or the like, which are received in the inner space of the receptacle R. The initial position of the member 7 in unstressed state thereof is shown in FIG. 2. As articles A are introduced into the receptacle R they will engage the member 7 in the region 8 which might be called the apex of the convolution. With the continued introduction of additional articles A this engagement in the region 8 serves to deflect the member 7 in the direction towards the inner surface of the wall 2, and as such deflection progresses, the "apex" advances in downward direction until the member 7 assumes the position illustrated in FIG. 1 in full lines and in phantom lines in FIG. 2, where the "apex" is identified with reference numeral 8'. Whereas the pressure exerted upon the inner surface of the wall 3, or upon relatively few articles A received in the receptacle R is initially small, this pressure will increase as deformation of the member 7 progresses from the full-line position of FIG. 2 to the phantom line position shown in that figure. Conversely, as articles A are removed from the receptacle R, the member 7 will be allowed to expand and again move towards the inner surface of the wall 3. It is clear from this that not only will the area of contact with the articles A be rather large, but also that the articles A will be maintained in their desired side by side and upright position within the receptacle R regardless of how many or how few such articles A are received in the receptacle.

In the embodiment of FIGS. 1 and 2 it is assumed that the articles A are introduced into the receptacle R through the open top of the same, that is in the direction of the arrow shown in FIG. 1. Of course, this is not always possible or desirable. In such cases, where the articles are to be introduced from the front of the receptacle, the sleeves 5 and 6 are so positioned on the inner surface of the wall 2 that the sleeve 5 is located adjacent the front edge of the wall 2 whereas the sleeve 6 is positioned adjacent the rear edge of that wall, that is spaced from the sleeve 5 in the direction in which the articles A are introduced into the receptacle R.

It will of course be understood that the positioning of the retaining means consisting of the sleeves 5, 6 and the member 7 can be readily reversed and that it can be provided on the inner surface of the wall 3 if this should be desired.

The embodiment illustrated in FIGS. 3 and 4 differs from that of FIGS. 1 and 2 in that the retaining means is separable from the receptacle which is here indicated with reference designation R'. In this figure like elements corresponding to those of FIGS. 1 and 2 have been identified with like reference numerals but with a prime suffix added except for reference numeral 8' which in FIGS. 3 and 4 has become 8''.

The advantage of the embodiment illustrated in FIGS. 3 and 4 is that the retaining means is separable from the receptacle R' and thus can be utilized with different ones of such receptacles, or can be moved to different positions on one and the same receptacle. It is clear, of course, that if the retaining means is used with different receptacles, these need not be of identical dimensions and this is one of the advantages of the releasable retaining means illustrated in FIGS. 3 and 4.

The elastic member 7' is of the same configuration as the member 7 in FIGS. 1 and 2. Unlike the embodiment of FIGS. 1 and 2, however, the member 7' in FIGS. 3 and 4 is secured not directly to the wall 2' of the receptacle R', but to a supporting member which is identified with reference numeral 10. This is generally plate-shaped and is provided with a hook-shaped portion 11 which can engage the free edge portion 9 of a wall of the receptacle, in this case the wall 2', whereby the member 10 is secured to the receptacle in the manner

4

illustrated in FIG. 3. It is of course evident that the entire member 10, or only the hook-shaped portion 11 thereof, may consist of a flexible material so that the hook-shaped portion 11 will clampingly engage the free edge portion 9 of the wall 2'. Again, this clamping action can be provided by a spring or other suitable means provided on or in conjunction with the hook-shaped portion 11. In place of separate sleeve members the sleeves 5' and 6' in the embodiment of FIGS. 3 and 4 are constituted by strip-shaped portions which are stamped out of the member 10 so that they remain connected thereto at one end. These portions are then suitably bent or formed into sleeve shaped as is clearly visible in FIG. 4. The end portions of the member 7' extend through these sleeves 5' and 6' and the free ends of these end portions are received in retaining pockets 12 and 13, respectively, which can either be secured to the member 10 or which can be provided by stamping corresponding portions of the member 10 through from the reverse side to the side visible in FIG. 4. Alternately, it would also be possible to simply provide slightly raised projections, which again can be stamped through from one side to the other of the member 10, against which the free ends of the member 7' would then abut. To prevent excessive turning of the end portions of the member 7' in the sleeves 5' and 6', and also to prevent undesired withdrawal from the same, the end portions of the member 7' are provided with the deformations 14 and 15 (compare FIG. 4) which must, of course, define with the surface of the member 10 such angles as to prevent undesired turning movement. The deflected position of the member 7' is again identified with phantom lines in FIG. 4, and with full lines in FIG. 3, and the reference numeral 8'' corresponds to the reference numeral 8' in FIGS. 1 and 2 as already pointed out above. Reference numeral 8' in FIG. 4 corresponds, of course, to reference numeral 8 in FIGS. 1 and 2.

Regardless of the particular embodiment, however, it is to be noted that in the fully deflected condition of the member 7 or 7', that is when the available space is completely filled with articles to be stored, the member 7 or 7' will be in contact with the respective inner surface on which it is carried.

It will also be realized that the present invention is suitable not only for the storing of file cards or file folders, but for the storing of all articles of an analogous type which are to be supported in side by side parallel relationship, and by way of further example it is pointed out that records in their jackets are usually desired to be stored in this manner to prevent deformation of the material of the record and undesirable sound distortions resulting from such deformation.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other type of constructions differing from the types described above.

While the invention has been illustrated and described as embodied in a storing device, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

What is claimed is:

1. A storing device, particularly for file cards and analogous articles which are to be stored in parallel side-by-side relationship, comprising a receptacle defining an inner space bounded by two transversely spaced substantially parallel inner surfaces; and retaining means, including a pair of sleeves on said one surface spaced and substantially aligned transversely to their respective axes and having respective open ends, an elongated elastic spring-wire retaining member having a length substantially greater than the distance between said sleeves and provided with two spaced end portions one of which is turnably received in one open end of one of said sleeves and the other of which is turnably received in the opposite

5

open end of the other of said sleeves, said retaining member further being provided with an intermediate portion defining a helical convolution projecting from said one towards the other of said surfaces, said intermediate portion being adapted to be progressively elastically deflected in the direction towards said one surface in response to insertion between said intermediate portion and said other surface of articles to be stored, whereby said intermediate portion acts to bias such articles towards said other surface.

2. A storing device as defined in claim 1, wherein said sleeves have respective axes extending in parallelism with the general plane of said one surface.

3. A storing device as defined in claim 2, wherein said axes are inclined towards each other and define with one another an acute angle.

4. A storing device as defined in claim 2, said receptacle having an opening for insertion of articles to be stored in predetermined direction and into said space, and said sleeves being transversely spaced from one another in said predetermined direction.

5. A storing device as defined in claim 4, wherein said intermediate portion defining said convolution comprises in the region of the leading one of said sleeves a section having a component of convolution in said predetermined direction.

6. A storing device as defined in claim 1, wherein said sleeves have respective axes extending in parallelism with one another.

7. A storing device as defined in claim 1, said retaining means further comprising a supporting member releasa-

6

bly maintained on said one surface, and said sleeves being provided on said supporting member.

8. A storing device as defined in claim 7, said receptacle comprising a wall having a free edge portion and being provided with said one surface; and wherein said supporting member comprises a hook adapted to engage said free edge portion whereby to releasably maintain said supporting member on said one surface.

9. A storing device as defined in claim 7, wherein said sleeves are constituted by strip sections of said supporting member having free terminal portions stamped from said supporting member and forming said sleeves.

10. A storing device as defined in claim 1, and further comprising limiting means provided on said end portions and operative for limiting turning movement of the same in said sleeves and with reference to said one surface.

References Cited

UNITED STATES PATENTS

736,268	8/1903	Kline	129—32
1,021,792	4/1912	Overmyer et al.	129—32
1,051,198	1/1913	Collins	206—39
1,282,094	10/1918	Lindner	129—32
1,373,359	3/1921	Seinecke	206—39

RAPHAEL H. SCHWARTZ, Primary Examiner

U.S. Cl. X.R.

206—74

5

10

15

20

25

30