

- [54] **RELEASABLE PAPER CLIP**
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- [56] **References Cited**
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[57] **ABSTRACT**

A paper clip is made of sheet metal folded over in a U-shaped profile to provide parallel clip faces and one of the clip faces has at least one slit bordering a strip of the sheet metal which is bowed out, so as to form a bistable spring portion. The spring strip is bowed out for inserting the clip. Finger pressure on the strip snaps it into its clipping position and finger pressure on the clip face beyond the ends of the bowed strip will snap the strip back into its open position for release of the papers.

4 Claims, 2 Drawing Figures

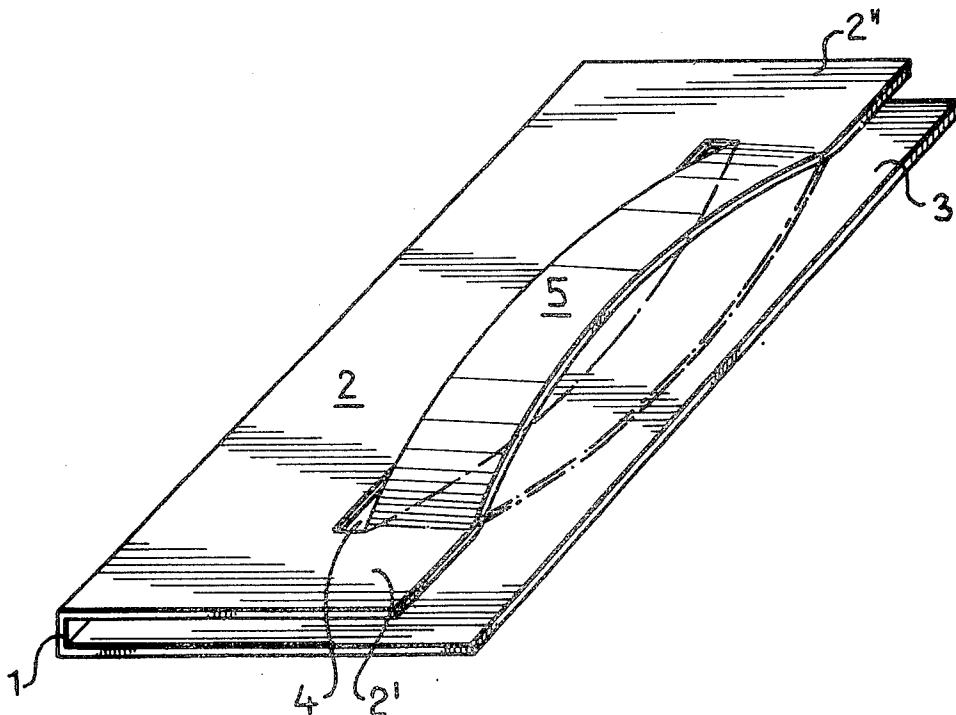


Fig. 1

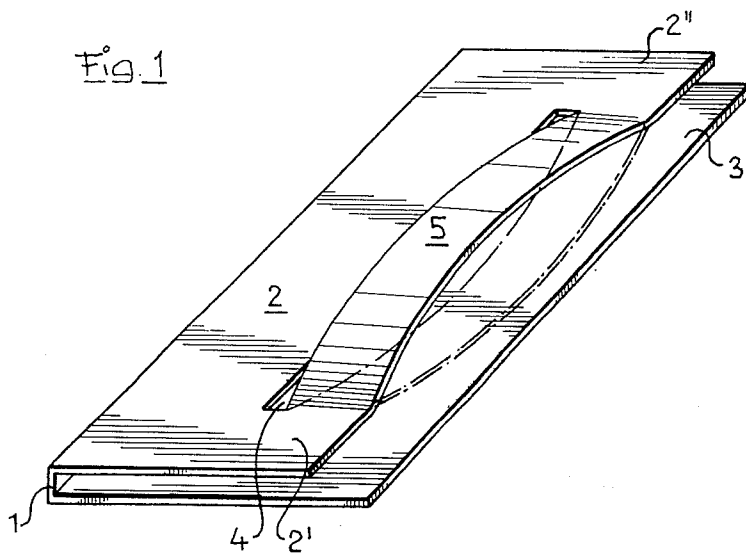
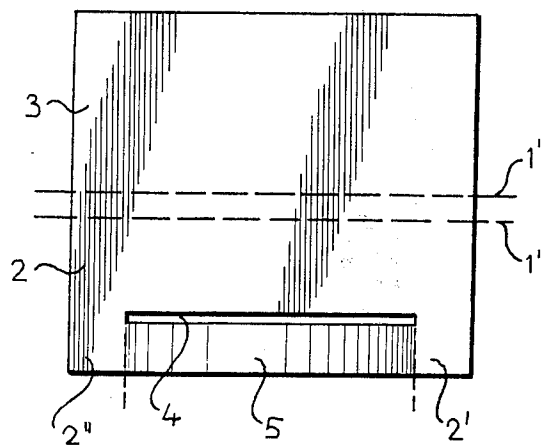


Fig. 2



RELEASABLE PAPER CLIP

This invention relates to a releasable paper clip for releasably holding a number of stacked paper sheets.

In the conduct of business and in desk work in general it is frequently necessary to clip together quickly a number of documents, pieces of correspondence, accounts, or the like, that should remain thereafter separable from each other without damage.

One known for this procedure is stapling, in which a wire staple is driven through the paper by a stapling tool and bent over on the bottom of the stack. To separate the papers again, the staple must to some extent be unbent, at some trouble, preferably with the help of an unstapling tool and if after removing one or a few papers the rest must be kept together, another staple must be driven through the remaining papers and bent over. Apart from this inconvenience, the paper is damaged by stapling, particularly when repeated, which in particular is embarrassingly noticeable in the case of thin papers, such as carbon copies, airmail paper and the like. Stapling is on this account of only limited use.

Another known common procedure, which does not damage the paper but has other deficiencies, is to use the well-known wire paper clip. The wire of this common paper clip is bent so that two spring legs of unequal length, each formed by a loop of wire are constituted which have a common fulcrum at the back end where the two loops are linked, about which fulcrum the spring force is exerted pushing the two legs together.

If the common paper clip is engaged with a sheaf of papers, the legs open up and form an acute angle with the aforesaid fulcrum as its vertex. Since a stack of documents generally presents a right-angled profile at its edge, the actual spring force of the paper clip will be applied only to the outer edge of the documents, which results in a poor hold on the documents. When in the case of a relatively thick stack of papers the legs of the clip must open wider, the spring force indeed increases, but the angle of opening likewise increases, so that the clamping effect of the clip generally becomes still worse. In the case of solid or smooth materials, the common paper clip then jumps off with the slightest movement. Since the common paper clip cannot be applied parallel to the edge of the documents, furthermore, the legs of the clip usually extend at least partly into the written portions of the pages, so that in turning the pages, part of the text remains covered by the previous page, which is quite annoying. When the page has reading matter on both sides, this disadvantage is still greater.

A deficiency with which practically all known types of clips are afflicted is that a spring force is effective as soon as a document begins to be inserted, which must be overcome by the advancing paper. With thin paper, this can be done only with some difficulty and the paper is often damaged thereby, at least to the extent of showing traces of handling. Where papers must be passed from persons who prepare them, then to one or more who must approve them before signing and finally for signature, it defeats much of the purpose of the care to prepare neat documents if outgoing correspondence bears traces of extensive handling. Furthermore, when one sheet is pulled out of a stack held together with a common paper clip, other sheets generally come out with the desired sheet or are damaged by the operation.

It is an object of the present invention to provide a releasable clip for holding a stack of office papers in which the above-described disadvantages are avoided. It is a further object to provide such a clip in a form suited for mass production which can easily and without the slightest disfiguring be applied to a paper stack and be removable just as easily and harmlessly, and this also when bound pages are included.

It is a further object of the invention to provide a clip which allow the clipped papers to be placed without difficulty in an envelope.

SUBJECT MATTER OF THE PRESENT INVENTION

Briefly, a piece of stiff resilient sheet material, preferably medium hardness steel, is bent or folded over into a substantially U-shaped profile, the flat portions corresponding to the legs of the U providing upper and lower clip faces for the paper that may be inserted therein. Prior to bending, the portion of the piece of sheet metal which is to form one of the clip faces is provided with at least one slit substantially parallel to the intended fold, and a strip of metal so defined is stretched and bowed by compressive force out of the plane of the sheet metal piece, while continuing to be joined to the remainder of the sheet metal piece by edge portions beyond the end of the slit or slits, thus constituting a bistable spring portion of the clip.

The clip is applied to the paper with the spring portion arched away from the paper, so that the paper slips in easily. Then finger pressure on the arched spring portion will cause it to snap into its other stable position in which it is bowed towards the paper and holds the paper against the opposite clip face. To remove the clip, finger pressure is applied to the edge portions at the end of the bowed spring. As soon as the clip face bearing the spring portion is pushed down against the paper so as to bring the spring portion into the same plane as the clip face, the spring portion snaps up so that it is bowed away from the paper, leaving the paper quite loose in the clip, so that the clip can be removed without friction. The spring portion can be defined by two slits instead of by one slit and the edge of the metal piece, and more than one spring portion may be provided if desired.

By applying the clip of the present invention parallel to the edge of the paper stack, the various individual sheets can be bound more or less like a brochure without interference with their use. By applying the clip of the present invention at the side of the papers, it is easy to keep all the sheets with their edges parallel. The clip provides a clipping force applying substantially parallel clipping faces directly towards each other against the stack of papers, so that the clip has a firm position and has no tendency to slide off.

The clip is preferably made of a single piece of sheet metal, preferably medium hard steel, which can be done in a single sequence of operations. The spring strip can be stretched by compressive force in one of these operations, thereby putting its unstable position (where it snaps one way or the other) approximately in the plane of the clip face.

The invention will be described by way of example with reference to the accompanying drawing, wherein:

FIG. 1 is a perspective view of a clip according to the invention, and

FIG. 2 is an unfolded plan view, on a smaller scale, of the clip shown in FIG. 1.

The clip shown in the drawing is a bent-over piece of stiff resilient material, preferably sheet steel of medium hardness which is bent over in a U-shaped, or approximately U-shaped profile. As shown in the drawing, there is a fold 1, the bottom of the U, an upper clip face 2 and a lower clip face 3 which is parallel to the upper clip face 2. A slit 4 is provided in the upper clip face 2 parallel to the fold 1. Bounded by the slit 4 is a strip 5 bowed out of the plane of the upper clip face 2, here shown upwardly arched. The strip 5 is connected at its ends with the edge zones 2' and 2'' at the sides of the clip face.

The developed or unfolded view of FIG. 2 shows the shape of the single piece of metal from which the clip can be made. The thickness of the sheet metal is preferably about 0.3 mm. In a single sequence of operations, for example with a follow-on tool, this piece of sheet metal can be stamped out, and the previously mentioned slit 4 can also be formed, which preferably has a width of from 1 to 2 mm, with the strip 5 having a width of about 4 to 5 mm. During this stamping operation the strip 5 is compressed, stretching it slightly by spreading the material. Since the edge zones 2' and 2'' remain fixed in position during this operation, the strip 5 is forced to bow out and does so along a roughly half-elliptical arch as shown in FIG. 1. The bistable spring strips preferably is bowed out of the plane of the clip face to about 3 mm at the vertex of the arch. Thereafter, the sheet metal is bent on the lines 1' and 1'' so as to form the clip shown in FIG. 1.

To use the clip, sheets of paper are simply inserted between the clip faces 2 and 3, or the clip is simply clipped on to a stack of papers, the clip being in the condition shown in FIG. 1. Finger pressure is then applied to the strip 5, so that after the strip reaches its unstable position which is more or less in the plane of the clip face 2, it springs by snap action into its inwardly bent final stable position, which is shown by dashed lines in FIG. 1. Pressure is thereby applied to the paper stack previously inserted, thus holding the stack firmly between the clip faces.

To open the clip, it is sufficient to apply finger pressure to the edge zones 2' and 2'', pushing them against the paper stack resting on the opposed clip face 3, thereby straightening the strip 5 and forcing it into its unstable position causing the strip 5 to snap over to the open position shown in FIG. 1.

As shown in FIG. 1, the clip face 3 is made somewhat longer than the clip face 2, in order to facilitate the insertion of sheets of paper.

Naturally, this lower clip face 3 could also be of a size suitable to provide a complete support surface for a sheet of paper, which would enable the clip structure to serve at the same time as a writing support, thus pro-

viding a one piece clip board. This structure provides the possibility of producing scratch paper pads in a simple fashion.

Experiments have shown that about three or four standard sizes of the clip of the present invention are sufficient to meet all normal requirements for various paper sizes and stack thicknesses.

The clip of the present invention is preferably produced with corners clipped or rounded off, and the edges may also be rounded off if desired. It is also possible to provide the fold 1 by a gradual bend to give a rounded U profile, rather than a square profile such as provided by the bends 1' and 1''. By the provision of additional slits two or more spring strips may be provided, or one strip may be bounded by two slits.

The paper clip of the present invention above described is simple and cheap to manufacture, as well as simple and secure in its handling and use.

Although the invention has been described with respect to a particular embodiment, it will be recognized that variations and modifications may be made within the inventive concept.

I claim:

1. A releasable paper clip comprising

a piece of stiff resilient sheet material bent or folded over in substantially U-shaped profile, the legs of the U being not necessarily of the same length and providing an upper and lower guide faces for a paper sheet or stack that may be inserted into the clip,

one of said guide faces (2) having at least one slit (4) substantially parallel to the fold (the bottom of the U) (1), said slit(s) together with the edge portions (2', 2'') of said guide face beyond the end(s) of said slit(s) forming boundaries of an arched strip (5) of said sheet material bowed out of the plane of said guide face and connecting with said edge portions in said plane at its ends, said arched strip constituting a bistable spring element in one stable position of which the arched strip (5) applies pressure against the opposite guide face (3) and in the other position of which the arched strip (5) is wholly outside the space between said guide faces (2, 3).

2. A paper clip as defined in claim 1, in which said stiff resilient sheet material is medium hardness sheet steel and said clip is made of one piece of said material.

3. A paper clip as defined in claim 1, in which said arched strip is a compressively lengthened portion of said material having its center of instability approximately in the plane of the guide face in which lie the edge portions to which said arched strip is connected at its ends.

4. A paper clip as defined in claim 1, in which said arched strip is laterally bounded by two parallel slits.

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