June 23, 1964 R. L. RHOADS 3,137,934

PAPER CLIP

Filed Nov. 9, 1961

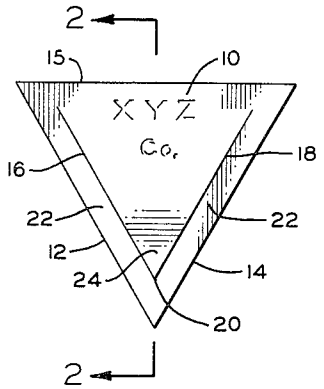

FIG. 1.

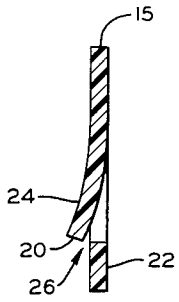

FIG. 2.

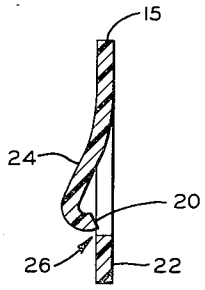

FIG. 4.

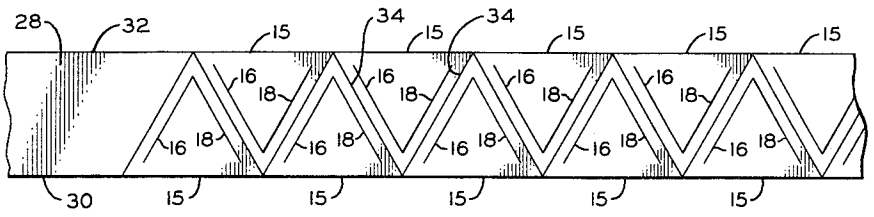

FIG. 3.

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United States Patent Office 3,137,934 Patented June 23, 1964

3,137,934

PAPER CLIP

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Filed Nov. 9, 1961, Ser. No. 151,396
2 Claims. (Cl. 29—417)

This invention relates to paper clips and methods of making same and more specifically to paper clips particularly adapted to be manufactured of synthetic resinous materials.

It is an object of the invention to provide a paper clip which is particularly adapted to be manufactured from synthetic resinous materials.

It is another object of the invention to provide such a paper clip which may be manufactured in very simple manner from a continuous strip of material with substantially no waste produced from the material, so that the clip may be manufactured at a sufficiently low cost to compete with ordinary wire paper clips.

It is another object of the invention to provide such a paper clip which may be manufactured in decorative colors and is adapted to carry advertising indicia of a firm using the same.

It is another object of the invention to provide such a paper clip which may be inserted very easily on a bundle of sheets of paper and which will efficiently secure the sheets together.

It is another object of the invention to provide such a paper clip which may be made from a continuous strip of material without the production of any waste and which will have a symmetrical shape permitting efficient packaging of the clips.

It is another object of the invention to provide a method of producing paper clips whereby a paper clip of substantial breadth may be made very efficiently and economically and with substantially no production of waste material.

Other objects and advantages of the invention will become apparent from the following description read in conjunction with the attached drawings in which:

FIG. 1 is a face view of a paper clip constructed in accordance with this invention;

FIG. 2 is a sectional view of the clip of FIG. 1 taken along the plane 2—2 of FIG. 1;

FIG. 3 is a face view of a strip of material from which the paper clips of FIGS. 1 and 2 are made in accordance with the method of this invention; and

FIG. 4 is a sectional view similar to FIG. 2 showing an alternative construction for the paper clip of the invention.

Referring now in detail to the drawings and particularly to FIGS. 1 and 2, the paper clip illustrated therein comprises a sheet of resilient material **10** cut in the form of an equilateral triangle having edges **12**, **14** and **15**. The clip is preferably made of a synthetic resinous material such as the thermoplastic and thermosetting resins now available on the market. A preferred one of said resins is the new type of polyethylene prepared at low temperature and having a high melting point, though suitable resins may include polyvinyl-chloride, polystyrene, polyesters such as polyethylene glycol terephthalate, polyamides, etc. The clip may also be made from sheet metal, though the synthetic resins are preferred due to their cost, the ultimate appearance of the device, and the fact that the process for making the clips may be more efficient when the clips are made from such synthetic resins.

A pair of intersecting slits **16** and **18** are cut through the body **10** parallel to the edges **12** and **14** thereof, with the slits intersecting at a vertex **20**. The slits define a generally V-shaped cut in the body dividing the body into an outer portion **22** and an inner portion **24** which are

integrally connected together adjacent to the edge **15** of the clip. As noted in FIG. 2, the inner portion **24** is bent out of the plane of the outer portion **22**, thereby defining an opening, indicated by arrow **26**, in which sheets of paper may be inserted in the clip.

In the alternative structure of the clip of the invention shown in FIG. 4, the area of the inner portion **24** adjacent to the vertex **20** has been bent through an angle exceeding 90° to provide a lip on the inner portion **24** over which paper may be inserted smoothly but which will lock upon the paper and prevent easy removal thereof from the clip.

With reference to FIG. 3, there is shown therein a strip of resilient material **28** from which a plurality of paper clips constructed in accordance with FIG. 1 have been stamped. It will be noted that adjacent clips are stamped from the strips **28** with the edges **15** of adjacent clips lying along opposite edges **30** and **32** of the strip **28** and with diagonal cuts **34** through the strip **28** defining the edges **12** and **14** of adjacent clips. The clips are preferably cut from the strip **28** by passing the strip **28** under a rotating cutter which simultaneously cuts the slits **16**, **18**, and **34** to thereby produce a plurality of paper clips from the strip **28** without producing any waste material.

At the same time that the clips are being cut from the strip **28**, the inner portions **24** of the clips are preferably deformed as shown in FIGS. 2 or 4, the deformation being provided by providing a blunt protrusion on the above-mentioned rotating cutter to deform the central portions **24** beyond their elastic limit. In this regard, it should be noted that the paper clips are preferably constructed of a thermoplastic resin, such as the above-mentioned high melting polyethylene, so that the cutter blade may be heated slightly to facilitate the deformation of the central portions **24** of the clips.

It should be noted that while the paper clips are illustrated as having the shape of equilateral triangles, it is preferred only that the clips have the shape of an isosceles triangle with two equal legs of the triangle being formed by the cuts **34** as the clips are made. This procedure provides symmetrical paper clips which may be cut from a continuous strip of material without producing any waste.

It should be noted that simultaneously with the cutting of the slits **16**, **18** and **34** in the process illustrated schematically in FIG. 3, suitable indicia may be stamped in the inner portion **24** of the clip to denote the firm for which the clips are manufactured. This feature of the clips and process is shown in FIG. 1 in which the name of a corporation is stamped in the central portion **24** of the clip.

While two specific embodiments of the clip of this invention and a method for their manufacture have been shown and described in detail herein, it is obvious that many modifications may be employed without departing from the spirit and scope of the invention.

I claim:

1. The method of making a paper clip which comprises providing a strip of resilient material having a pair of faces and a pair of elongated parallel edges bounding said faces, making a plurality of V-shaped cuts through said strip spaced from each other longitudinally of said strip and overlapping each other laterally of said strip with all portions of said cuts spaced between said edges, alternative cuts having vertices adjacent to opposite edges of said strip and having right and left portions with said portions of adjacent cuts being parallel right-to-left and left-to-right, deforming portions of said strip adjacent to said vertices away from the remainder of said strip, and making severing cuts in said strip extending continuously between said edges of said strip parallel to

said right and left portions of said V-shaped cuts with adjacent severing cuts intersecting at said edges to sever said strip into a plurality of segments with each segment having the shape of an isosceles triangle and with each of said segments containing one of said V-shaped cuts thereby producing a plurality of paper clips from said strip while producing substantially no waste material from said strip.

2. The method of making paper clips which comprises providing a strip of resilient material having a pair of faces and a pair of elongated parallel edges bounding said faces, making a plurality of V-shaped cuts through said strip spaced from each other longitudinally of said strip and overlapping each other laterally of said strip with all portions of said cuts spaced between said edges and with said cuts having vertices adjacent to the edges of said strip, deforming portions of said strip adjacent to said vertices away from the remainder of said strip, and making severing cuts in said strip extending continuously between said edges of said strip and intersecting at said edges to sever said strip into a plurality of segments which have exterior vertices adjacent to said

vertices of said V-shaped cuts and with each of said segments having the shape of an isosceles triangle with each of said segments containing one of said V-shaped cuts, thereby producing a plurality of paper clips from said strip while producing substantially no waste material from said strip.

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