

July 31, 1945.

R. A. PERCOCO

2,380,786

STAPLE

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FIG. 1

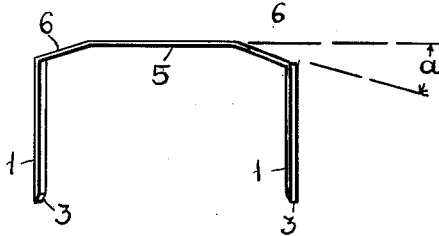


FIG. 2



FIG. 3

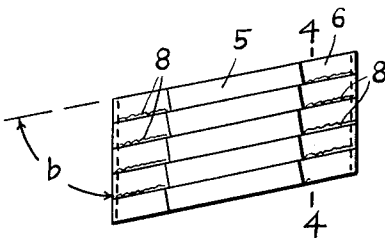


FIG. 4

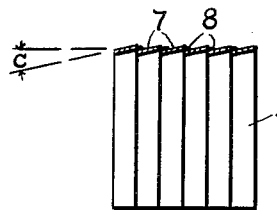
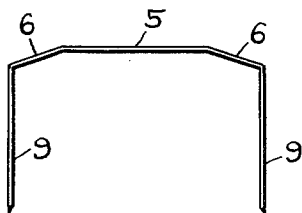


FIG. 5



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5 Claims. (Cl. 85-49)

My invention relates to staples and has particular reference to staples made of wire and adapted to be used with stapling machines for stapling or stitching together sheets of paper, fabric, etc.

Ordinary staples having straight top or bight portions have a disadvantage in that the straight top portion, being usually relatively long, has a tendency to sag down under the pressure of a driver in a stapling machine, with a result that the staple may buckle before the legs fully penetrate the work, so that the damaged staple jams the stapling machine.

One of the objects of my invention is therefore to provide a staple with the top portion so constructed as to avoid the danger of the staple buckling under pressure. I have found that this object can be satisfactorily accomplished by beveling the upper corners of the staple at a small angle. Such beveled corners materially increase the resistance of the staple to buckling. The middle portion of the upper bridge or bight of the staple is, however, left straight, in order to provide a good bearing surface for the staple driver in a stapling machine. I have found that the straight portion must be of a size comparable to the combined length of the beveled corner portions, since if it is made too small, the insufficient bearing surface may cause the staple to be twisted to one or the other side and to cause the staple thereby to be deformed and wedged in the machine.

The staples are usually glued together into packages or bars for convenience in using them with stapling machines. With flat topped staples, however, glue spread along the tops of the staples often causes trouble in the stapling machine, because of relatively small clearances required, and any accidental excess of glue on the tops may cause sticking and buckling of the staples. A similar trouble may also occur with staples having pointed or angular tops, the glue at the middle pointed portions interfering with the normal action of the staple driver. In my staples I avoid this difficulty by placing the glue at the corner portions only, leaving the straight middle portions free of glue, thereby entirely avoiding any possible irregularity of the action of the staple driver which may be caused by the excess of glue between the staples. At the same time, the stepped surface of the staple package or bar at the corners provides ample room for the glue so that the staples are firmly held together by the glue even with relatively narrow corner portions.

My invention is more fully described in the accompanying specification and drawing in which:

- Fig. 1 is a front view of my staple;
- Fig. 2 is an end view of the same;
- Fig. 3 is a top view of a package or bar of the staples glued together;
- Fig. 4 is a sectional view taken on the line 4-4 of Fig. 3;
- Fig. 5 is a front view of a modified staple.

My staple as shown in Figs. 1 and 2 consists of a flat piece of metal wire bent to form two legs 1, substantially parallel to each other, and a bridge or bight portion connecting the legs on top. The legs may be sharpened at 2 to facilitate their penetration into sheets of paper or similar material to be stapled. The bridge or bight portion comprises a middle upper portion 3 which is substantially straight and at right angles to the legs and corner portions 4 inclined at a small angle to the upper straight portion 3. The angle may be from a few degrees to as much as 15° although I prefer to make this angle of about 5°. The length of one corner portion forms a substantial portion of the distance between the legs 1 and may be from about one quarter to about one half of the length of the top straight portion.

The legs of the staples are preferably twisted at a small angle to the plane of the staple so that when several such staples are placed together and cemented at the edges into a bar, according to the general practice of using the staples, the legs form two parallel flat surfaces as shown in Fig. 3, while the top portions extend at an angle *b* to the axis of the bar of the staples or to their sides. As a result, although the sides of the bar will be flat and smooth, the upper portions will be staggered, the leading edge of one staple being higher than the lagging edge of the next staple, so that between every pair of staples there will be a pocket or groove 7. These grooves are used for cementing the staples into a package or bar by a glue-like composition 8 as shown in Figs. 3 and 4. No glue will be applied to the straight top portions 3 so that the latter will remain clean and free from any possible excess of the glue which could cause buckling of the staples. Because of the grooves or recesses 7 between the staples at the corners, a relatively large amount of the glue can be placed therein, firmly uniting the staples together even without any glue on the middle portions 3.

The staples can be made, if desired, without

the twisted sides of the legs as shown in Fig. 5, the legs 8 being in two parallel planes at right angles to the plane of the upper bridge portion 5.

It will be understood that various features and principles of each of the embodiments of the invention above described or referred to may be utilized or substituted in the other embodiments.

While the invention has been described in detail with respect to certain particular preferred examples, it will be understood by those skilled in the art after understanding the invention, that various changes and further modifications may be made without departing from the spirit and scope of the invention, and it is intended therefore in the appended claims to cover all such changes and modifications.

What is claimed as new and desired to be secured by Letters Patent is:

1. A staple for a stapling machine made of a single piece of metal wire of a uniform cross-sectional shape bent to form two substantially parallel legs and a substantially straight upper bight portion, the straight portion being materially shorter than the distance between the legs, portions of the wire between the upper ends of the legs and the ends of the straight portions being inclined downwardly from the straight portion to the leg portions.

2. A staple for a stapling machine made of a single piece of a flat wire of a uniform cross-sectional shape bent to form two substantially parallel legs and a substantially straight upper bight portion, the straight portion being substantially shorter than the distance between the legs, portions of the wire between the ends of the straight portion and the upper ends of the legs being inclined outwards and downwards, the sides of the legs being parallel to each other and at a small angle to the straight portion, a plurality of the staples being glued together with the legs

having their edges abutting each other and the middle portions extending at an angle to the legs.

3. A staple for a stapling machine made of a single piece of a flat wire of a uniform cross-sectional shape bent to form two substantially parallel legs and a substantially straight upper bight portion, the straight portion being substantially shorter than the distance between the legs, portions of the wire between the ends of the straight portion and the upper ends of the legs being inclined outwards and downwards, a plurality of the staples being glued together in an angular relationship to the sides of the staples the length of each leg being substantially greater than one-half the distance between the legs.

4. A staple for a stapling machine made of a single piece of a flat wire of a uniform cross-sectional shape bent to form two substantially parallel legs and a substantially straight upper bight portion, the straight portion being substantially shorter than the distance between the legs, portions of the wire between the ends of the straight portion and the upper ends of the legs being inclined outwards and downwards, a plurality of the staples being glued together in an angular relationship to the sides of the staples, the glue being placed at the angular corner portions of the staples.

5. A staple for a stapling machine made of a single piece of a flat wire of a uniform cross-sectional shape bent to form two substantially parallel legs and a substantially straight upper bight portion, the straight portion being substantially shorter than the distance between the legs, portions of the wire between the ends of the straight portion and the upper ends of the legs being inclined outwards and downwards at an angle from about 5° to about 10°.

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