Sept. 20, 1966 F. L. RIEGER ET AL 3,273,705

FASTENER

Filed July 22, 1963

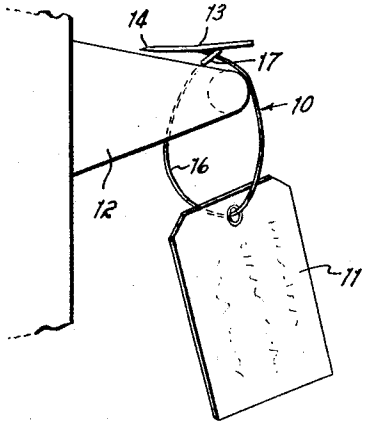


Fig. 1

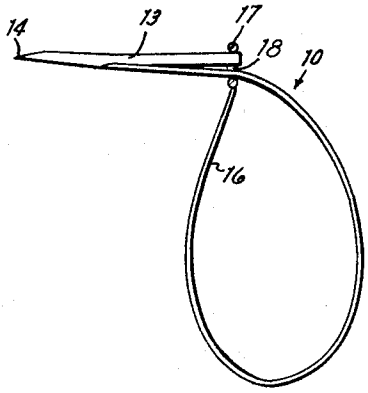


Fig. 2

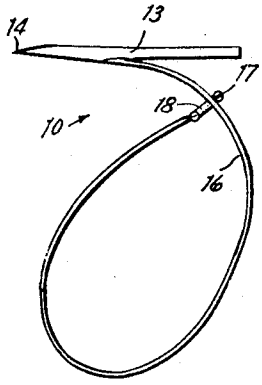


Fig. 3

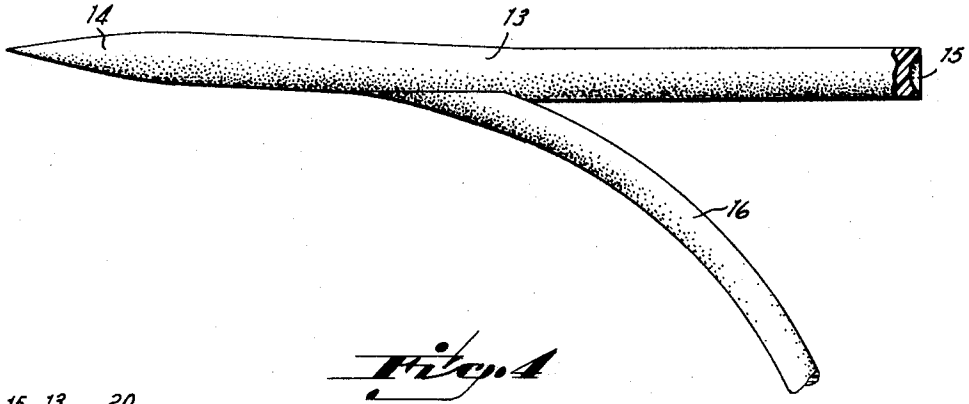


Fig. 4

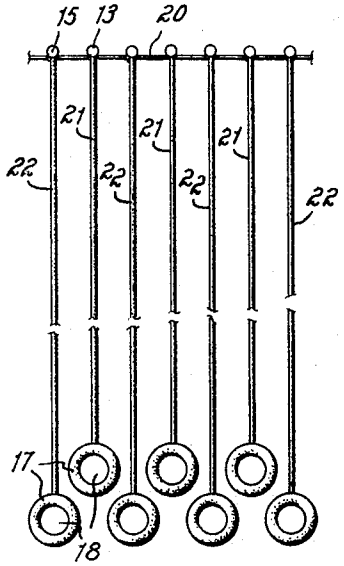


Fig. 6

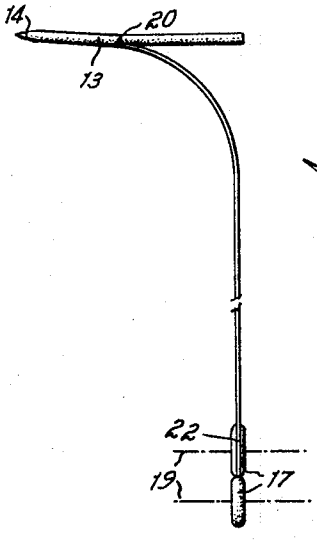


Fig. 7

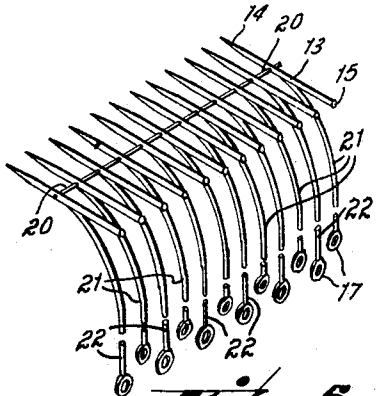


Fig. 5

INVENTORS.

Frederic L. Rieger

BY Paul H. Hamisch, Jr.

Wood, Herron & Evans

ATTORNEYS

United States Patent Office 3,273,705 Patented Sept. 20, 1966

3,273,705

FASTENER

Frederic L. Rieger, Dayton, and Paul H. Hamisch, Jr., Xenia, Ohio, assignors to The Monarch Marking System Company, Dayton, Ohio, a corporation of Ohio

Filed July 22, 1963, Ser. No. 296,664
3 Claims. (Cl. 206—56)

This invention relates to fasteners and more particularly the invention is directed to a flexible strand having cooperating fastening means on each end.

The object of a fastener of the type to which the present invention is directed is to secure a hang tag to an article of merchandise, the operation being performed by the merchant prior to displaying his goods for sale. In this environment there are two dominant desirable features to be attained. The first is that the fastener should be easily applied and the second is that the fastener should securely retain the hang tag to the merchandise so that it cannot be inadvertently dislodged and further so as to make it difficult for the hang tag to be surreptitiously shifted from one article to another.

It has been an objective of the invention to provide an integral molded plastic fastener comprising a needle, a flexible strand secured at one end intermediate the ends of the needle and an eyelet secured to the other end of the strand. The flexible strand and needle combine to form what is effectively a barbed needle which is easily applied but thereafter dislodged only with difficulty. One manner of using the fastener is to pass the needle through the hang tag and object of merchandise and then to pass the needle through the eyelet. To facilitate this operation the invention provides for an orientation of the needle and eyelet such that their axes lie in the same plane whereby no twisting of the strand is required in order to bring the needle into alignment with the hole in the eyelet. Another manner of using the fastener is to project the needle directly into a fabric, the "barb" retaining the needle in the fabric and the eyelet retaining a hang tag on the strand.

It has been another objective of the invention to provide a fastener of the type described which can be mounted in an applicator, or more specifically, a gun, by which a plurality of fasteners be rapidly ejected into the articles of merchandise. To this end there is provided a belt of fasteners comprising a plurality of spaced, parallel needles each having a strand and eyelet attached thereto, the needles being interconnected by a thin easily severed filament. For reasons of the desired compactness of the belt and gun into which the belt is fed, it is preferred to have the needles as close as possible. Further for the reasons discussed above it is desirable to orient the axes of the eyelets in the same plane as the needle. To attain both these objectives it is a feature of the invention to provide a belt in which alternate strands are shorter than the adjacent strands so that the eyelets have a staggered relationship to one another. This permits the integral molding of the belt with the needles quite close to one another and with a staggering of the eyelets so that they do not interfere with one another.

These and other objectives of the invention will become more readily apparent from the following detailed description taken in conjunction with the accompanying drawings in which:

FIG. 1 is an elevational view showing the fastener applying hang tag to an object,

FIGS. 2 and 3 are elevational views of the fastener illustrating one form of securing the ends of the fastening strand,

FIG. 4 is an elevational view of the needle and a portion of the strand,

FIG. 5 is a perspective view of a belt formed in accordance with the invention,

FIG. 6 is a rear elevational view of the belt, and

FIG. 7 is a side elevational view of the belt.

Referring to FIG. 1 the fastener indicated at **10** is shown attaching a hang tag **11** to an article **12**. The fastener comprises a needle **13** having one end **14** tapered to a point and having a recess **15** (FIG. 4) in the other end. A strand **16** is integrally connected to the needle **13** intermediate its ends and forms an acute angle with the recessed end portion of the needle. The other end of the strand **16** has an eyelet **17** attached to it the eyelet **17** having opening **18** of sufficient diameter to permit the passage of the combined needle and strand through it as illustrated in FIG. 2. Preferably the fastener is made of nylon or other plastic having the property and resilience and flexibility. The strand should be flexible enough so that the eyelet can easily be swung into position and receive the needle **13**. On the other hand the strand should be suitably resilient or stiff to maintain the axis **19** of eyelet **17** in the same plane as the needle **13** so that it is always in position to receive the needle without requiring any twisting of the strand.

There are two principal modes of attaching the fastener to an article. In the case of fabrics such as clothing or the like, the needle is driven completely through the fabric. After it passes through the fabric the resilience of the fastener material causes the recessed end portion of the needle to spring away from the strand thereby blocking withdrawal of the fastener. Alternatively, the fasteners may be applied as illustrated in FIGS. 1 to 3 wherein the strand is formed as a loop around the members to be joined, the loop being formed by threading the needle through the eyelet **17**. Again, the resilience of the fastener material causes the recessed end portion of the needle to spring away from the strand thereby blocking inadvertent withdrawal of the needle from the eyelet.

A belt of fasteners is illustrated in FIGS. 5 to 7 and is suitable for use in an applicator gun of the type described in co-pending application Fastener Gun filed January 30, 1963. The belt comprises a series of fasteners of the type described above the fasteners being interconnected by a filament **20** which is joined to the needles at approximately their centers. As described in the co-pending application referred to above the filaments are easily severed from the needles as the needles are projected out of the gun into which the belt is fed. As best seen in FIG. 6, alternate strands indicated at **21** are shorter at their adjacent strands indicated at **22** and as a consequence the eyelets **17** have a staggered relationship to one another. It can also be seen that the distance between alternate eyelets is approximately one-half the width of an eyelet so that without the staggered relationship it would not be possible to mold a belt having parallel strands with eyelets at their ends and with a spacing of the needles by distance less than the width of the eyelets. It should also be noted that the eyelets lie in the plane of the parallel strands or, stated another way, the axes of the eyelets lie in the same plane as the needles so that the eyelets can be conveniently positioned to receive the needles without requiring the twisting of the strands.

The recess **15** in the end of the needle receives a plunger in the applicator gun, the recesses and plunger cooperating to maintain a proper engagement one with the other until the needle has left the gun and has been projected either into a fabric or through the eyelet.

We claim:

1. A belt of fastening devices comprising,

a plurality of uniformly spaced parallel needles interconnected by a severable filament,

said needles each tapering to a point at one end and having a recess in the other end,

a plurality of spaced parallel flexible strands each having one end integrally connected to a respective needle intermediate the ends thereof and forming an acute angle with the recessed end portion of said needle,

an eyelet integral with the other end of each said strand and lying in the plane defined by said strands,

the alternate strands being shorter than the adjacent strands to provide a staggered relationship of eyelets to each other, and

said needles being spaced apart a distance less than the width of an eyelet.

2. A belt of fastening devices comprising,

a plurality of uniformly spaced parallel needles interconnected by a severable filament,

said needles each tapering to a point at one end and having a recess in the other end,

a plurality of spaced parallel flexible strands each having one end integrally connected to a respective needle intermediate the ends thereof and forming an acute angle with the recessed end portion of said needle, and

an eyelet integral with the other end of each said strand and lying in the plane defined by said strands.

3. A fastening device comprising,

a needle tapering to a point at one end and having a recess at the other end,

a flexible strand having one end integrally connected to said needle intermediate its ends and forming an acute angle with the recessed end portion of said needle, and

an eyelet integral with the other end of said strand and having its axis lying in a plane common to said needle, said strand having sufficient resilience to maintain the defined orientation of the eyelet and needle.

References Cited by the Examiner

UNITED STATES PATENTS

2,517,376	8/1950	Artzt et al.	40—20
2,669,795	2/1954	Spaulding et al.	40—20
2,915,177	12/1959	Flood	206—56
3,048,906	8/1962	Patterson	24—16

LOUIS G. MANCENE, *Primary Examiner.*

JEROME SCHNALL, *Examiner.*

W. J. CONTRERAS, *Assistant Examiner.*