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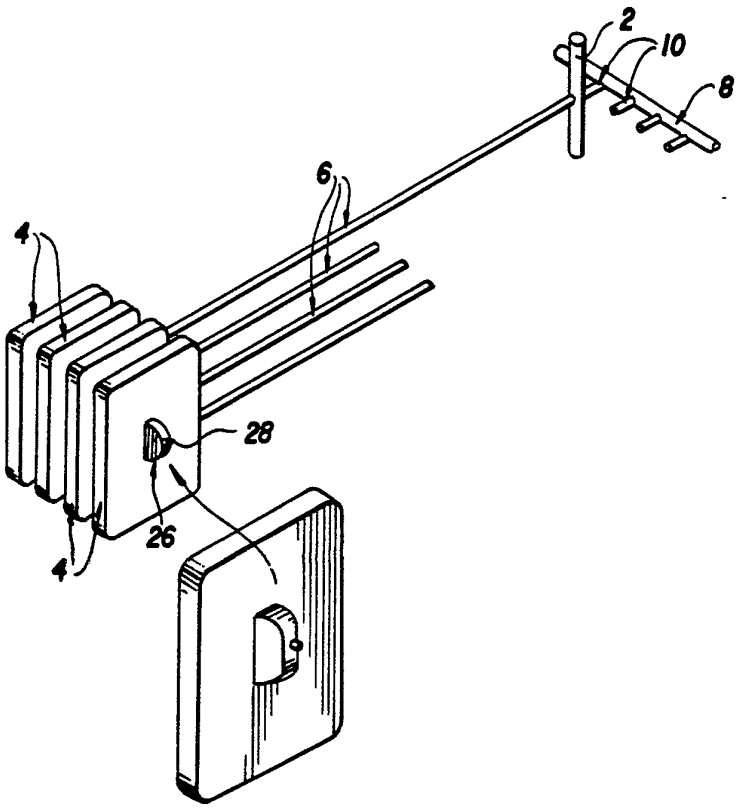
(54) Title: SNAG RESISTANT CONNECTED PADDLE FASTENER



(57) Abstract

A plurality of attachments, each designed for insertion through an object, formed into a relatively tangle-free assembly by being secured together by connectors which do not leave an irregular, snagging stub. Preferably the connectors are more readily severable in torsion than in tension and are formed by the joinder of asymmetric projections.

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SNAG RESISTANT CONNECTED PADDLE FASTENER

BACKGROUND OF THE INVENTION

This invention relates to attachments for insertion through objects, and methods of use. Usually the attachment secures two objects together and are widely used to secure tags or labels to garments and the like. In particular, the invention relates to assemblies which permit the use of such attachments without objectionable snags.

One form of such attachments is shown in Hamilton, U.S. Patent 3,733,657 of May 22, 1973 titled "Assembly of Attachments and Method of Manipulating Same". Each attachment has an object-penetrating part at one end, and enlarged part at the other end, and an elongated section connecting the parts. The object-penetrating part passes through a hole in the object with which it is to be associated, and remains on the far side of the object. The elongated section passes through the hole, and the enlarged part remains on the near side of the object. The object-penetrating part passes endwise through the hole, but after passage assumes its normal substantially perpendicular position with help to the elongated section. This, and the enlarged portion, prevent the attachment from escaping from the object.

As disclosed, the attachments are generally in the form of an assembly or "clip" with a plurality of such attachments. An attaching device or "gun" as is disclosed in Bone U.S. Patent 3,103,666 of September 16, 1963 titled "Tag Attaching Apparatus" is employed to form the hold through the object with which the attachment is to be associated. The gun also severs a single attachment from the assembly of attachments, and forces the object-penetrating part through the hole formed in the object.

Attachments of the foregoing type have become extremely widely used in industry, not only for the attachment of tags and labels to articles sold in retail, where the attachments are effective in preventing shoppers from switching tags, by removing a tag from a low-priced article and substituting it

to a higher-priced article, but also for securing objects to one another, such as a pair of shoes. The attachments can be applied at a rapid rate by even relatively unskilled personnel.

In order for the attachments to perform their desired function, the elongated connecting sections must be at least somewhat flexible and tangling should be avoided. This occurs when the elongated connecting sections of some of the attachments become wrapped wholly or partially around similar sections of other attachments, for example when clips are packed together. It is essential that when a clip is to be used, it must be readily separable from the other clips with which it is packaged. In addition, when an attachment is to be separated from the clip it must not be tangled with any of the attachments remaining in that clip. For that purpose connectors have been provided between the enlarged parts, but they produce irregular stubs when separated. These are objectionable in general and particularly with fine fabrics, where snagging can result.

It is therefore an object of the present invention to devise an attachment assembly construction which will eliminate both the tangling and snagging problem.

It is another object of the present invention to devise a construction for a clip or assembly of attachments which will reliably maintain the attachments in proper orientation relative to one another, while they remain a part of the clip. Relatively strong forces tending to move the attachments from their desired relative positions are to be resisted, while readily permitting the individual attachment to be completely separated from the clip without having to exert any great force. At the same time snagging is to be avoided.

It is yet another object of the present invention to secure the individual attachments of a clip together in such a way that they can be pulled apart only with great difficulty but can be twisted apart with relative ease and yet avoid snagging.

It is still another object of the present invention to devise an attachment clip in which the individual attachments are not only secured together adjacent their object-penetrating parts, but are also secured together in a readily separable manner adjacent their other ends, preferably at their enlarged parts, while preventing snagging.

It is still another object of the present invention to so manipulate a clip of attached-together attachments as to separate the attachment to be used from the clip at its object-penetrating part and forcing the penetrating part through the object with which the attachment is to be associated, and then so manipulating the clip as to twist the clip relative to the partially separated attachment, to effect complete separation of that attachment form the clip without creating an irregular stub that can cause snagging.

SUMMARY OF THE INVENTION

To accomplish the foregoing and other objects, means are provided for securing the attachments together not only adjacent their object-penetrating parts, but also adjacent the enlarged parts, using biaxially different members which either are in direct contact or are joined by a thin member of asymmetric cross section.

While the attachments remain secured together at their object-penetrating ends and at their enlarged-part ends they tend to remain substantially parallel to one another. However, when an attachment has been separated from the clip at its object-penetrating end, it is then free to be moved relative to the other attachments on the clip, and in particular it may be rotated or moved in torsion relative to the other attachments. Indeed, the normal operations involved in manipulating a given attachment, as in securing a tag to a garment or otherwise securing two objects together, readily lends itself to the rotation of the attachment in use relative to the clip. Accordingly, it has been found advantageous to secure the attachments to one another at their enlarged-part ends by means which resist tension forces substantially, with less resistance to torsion. A thin and

short filamentary connection or direct contact of protuberances has this direct characteristic. With such a connection between the attachments adjacent the enlarged-part ends the attachments normally are very reliably maintained in position as part of the clip, preventing tangling, but each attachment as it is individually used may readily be separated from the clip without requiring any separate action on the part of the operator other than a continuous movement which is part of a normal attaching operation. Protuberances associated with the thin connection, or in direct contact, assure a smooth separation to avoid snagging.

The enlarged parts of the attachments are usually spaced from one another by a distance which hinders attainment of a tension-resistant and torsion-yielding characteristic. Accordingly, special constructions provide the tension-resisting and torsion-sensitive connection, without snagging consequences, or direct contact, between the enlarged parts of adjoining attachments on the clip. These constructions may be formed readily, at the same time, and as part of the same process as the formation of the attachments namely a molding combined with a stretching operation. Indeed, according to certain embodiments here disclosed the only modification involved in making attachment clips according to the present invention is in the shaping of the cavities in the molds which are used in any event.

DESCRIPTION OF THE DRAWINGS

To the accomplishment of the above, and other objects, as the present invention relates to the construction and manipulation of an assembly or clip of a plurality of connected attachments, illustrated in the accompanying drawings, in which,

FIG. 1 is a schematic view showing a clip of attachments constructed in accordance with the present invention being used in conjunction with an attaching device having a needle about to penetrate an object.

FIG. 2 is a view similar to FIG. 1 but showing the needle of the attaching device having penetrated the object and the attaching device actuated so as to sever the object-penetrating part of a leading attachment from the clip and move it through a hole in the object formed by the needle;

FIG. 3 shows the attaching device having been withdrawn from the object and moved away, with the leading attachment associated with that object and rotated with respect to the other attachments still remaining on the clip;

FIG. 4 illustrates the condition of the parts after the leading attachment is twisted from the clip, while the remainder of the clip on the attaching device.

FIG. 5 is a fragmentary perspective view, of a portion of a clip of attachments in accordance with the present invention;

FIG. 6 is an end view of the attachments of Fig. 5;

FIG. 7 is a cross-sectional view, on a still further enlarged scale, taken along the line 7-7 of FIG. 6;

FIG. 8 is a cross-sectional view of FIG. 7;

FIG. 9 is a view showing a modification of Fig. 5;

FIG. 10 is a view showing a different arrangement of Fig. 5 for securing together the enlarged parts of the attachments;

FIG. 11 is a front elevational view, on a further enlarged scale, of the enlarged-part ends of the attachments of FIG. 10;

FIG. 12 is a view of an alternative embodiment in which the enlarged attachment parts are modified;

FIG. 13 is an end view of the enlarged-part ends of the attachments of Fig. 12.

FIG. 14 is another illustrative embodiment; and

FIB. 15 is an enlarged view of the enlarged parts.

DETAILED DESCRIPTION

In the embodiment of FIGS. 5-8 each attachment has a bar-like object-penetrating part 2 at one end, an enlarged part 4 at the other end, and an elongated section 6 connecting the parts 2 and 4. Each of the object-penetrating parts 2 is connected to a rod 8 by a narrow neck 10. As shown in FIGS. 1-4, the attaching gun generally designated 12 is provided with an object-penetrating needle 14 having a slot 16 along one side thereof communicating with a slot 16' on the side of the gun proper. The clip is adapted to be inserted into the gun 12 so that the rod 8 passes through the gun along with the object-penetrating parts 2, while the elongated section 6 passes through a slot 17 formed in the side of the gun, until the object-penetrating part 2 of a given attachment is brought in line with the slotted needle 14.

Thereafter, when the handle 20 of the attaching device is squeezed, a plunger engages the end of the object-penetrating part 2 of the leading attachment and causes it to move relative to the neck 10, to produce breakage. The object-penetrating part 2 is then pushed through the needle 14, with the elongated section 6 moving along the slots 16' and 16.

In order to associate a given attachment with one or more objects, generally designated O, the operator, after inserting a clip of attachments into the attachment device 12, pushes the needle 14 through the object O, to form a hole in the object if no hole already exists. Actuation of the handle 20 then separates the object-penetrating part of the leading attachment from the remainder of the clip and pushes it through the needle 14 and out of the tip. The attachment part 2 initially a position substantially at a right angle to the surface of the object O, but thereafter becomes parallel to prevent the attachment from disengaging itself from the object O when the attaching gun 12 is withdrawn, pulling its needle 14 out from the object O. This is illustrated in FIGS. 1 and 2.

The individual attachments in the clip are secured together adjacent their object-penetrating parts 2, as by the neck 10 and rod 8, and also by severable securing means generally designated 22 between the individual attachments adjacent the enlarged parts 4. The securing means 22 thus holds the attachments in proper orientation while they remain in the clip at its penetrating part end and operatively associated with the object O, the securing means 22 is then broken in any suitable manner in order to permit attachments remaining in the clip to be moved away from the leading attachment now operatively associated with the object O.

It is desirable that the leading attachment be readily severable from the clip after it has been associated with the object O. However, the attaching means 22 must be sufficiently strong to withstand dislocative forces and maintain the attachment as a part of the clip. Thus the securing means 22 must be both weak and strong. While the object-penetrating parts 2 of the attachments are secured together, the attachments must remain essentially parallel to one another, and hence the dislocative forces to which they are subjected will primarily be in tension, either longitudinal or shear (shear is considered as analogous to tension). However, when the object-penetrating part 2 of the leading attachment has been severed from its neck 10, the clip can then be twisted or rotated with respect to that leading attachment, as is shown in FIGS. 3 and 4. Since rotation of the clip relative to the leading attachment can take place simply as a part of the continuous movement of the attaching device away from the object O as a part of the attaching operation, if the securing means 22 is readily susceptible to breaking under torsional forces the leading attachment may be readily separated from the clip as a part of the attaching procedure.

One securing structure which has this characteristic is a thin short filament formed of material sufficiently tough to withstand tension or such bending as it may be subjected to. By reason of the shortness of that filament, however,

it can be broken relatively readily when twisted. The normal spacing between attachments in a clip, usually about .04 inch, is far too large to produce a connector having that characteristic.

Accordingly, and as may best be seen from FIGS. 6, 7 and 8, when the clip is molded or otherwise formed, the enlarged parts 4 are provided on their facing surfaces 24 (separated from one another by the distance a) with opposing, biaxially different protrusions 26 with ends which are separated from one another by a small distance b. A thin asymmetric neck or filament 28 is provided between the biaxially different protrusions 26. The filament 28, in one embodiment, may be rectangular in cross section as shown in Fig. 8. It will be appreciated that they are by way of example only, and that different dimensions and shapes will be applicable depending in part on the materials used and in part upon the applications involved and the forces to which the individual attachments are expected to be subjected during use.

The protrusions 26 and filamentary neck 28 may be, and preferably are, integrally formed with the other portions of the attachment clip in the course of a single molding operation, it being necessary only to provide cavities in the mold for the protrusions 26 and neck 28 in addition to the cavities already provided for the other portions of the clip.

The embodiment of FIG. 8 is similar to that of FIG. 7 except that the protrusions 26' are formed only at the lower half of the enlarged parts 4 and not at the upper half thereof. This type of construction can readily be utilized where the cavities in the mold separate along the axis of the neck 28, by providing cavities for the protrusions 26' and neck 28 only in the lower mold and not in the upper mold.

FIG. 9 discloses an embodiment similar to that of FIG. 5 except that the enlarged parts 4' for the embodiment of FIG. 9 are not paddle-shaped, as in FIG. 5, but instead are bar-shaped, comparable to the object-penetrating parts 2.

However, the bars 4' constituting the object-penetrating parts in FIG. 9 are secured to one another by securing means 22 comprising protrusions 26 and necks 28 in fully the same manner as in FIG. 5.

In the embodiment of FIGS. 10 and 11 the enlarged parts 4 of the attachments, instead of being connected to one another at their facing surfaces 24, are connected to one another at their lower edges by securing means 22 connected between the individual enlarged parts 4 and a rod 30. This arrangement is analogous to that employed for securing together the object-penetrating parts 2, except that the securing means 22 for the enlarged parts 4 is more readily frangible than the necks 10 for the object-penetrating parts 2. The necks 10 are adapted to be severed by the operation of the attaching device 12, whereas the securing means 22 are adapted to be manually severed. Hence the former may be significantly stronger than the latter. As may best be seen in FIG. 11, it is preferred that the securing means 22 in the embodiment of FIG. 10 also be more sensitive to torsion than to tension (or shear), and consequently such securing means 22 comprises, extending up from the rod 30, protrusions 26a and short thin necks 28a which may be like the necks 28.

While in the illustrated embodiments the securing means 22 engage and directly connect the enlarged parts 4 themselves, it will be appreciated that such a relationship is not essential provided that the securing means are located sufficiently remote from the securing means at the other end of the attachments - the rod 8 and necks 10 - to maintain the attachments against relative rotation. For example, the securing means 22 could be located between the elongated sections 6 near the enlarged parts 4, particularly if, as is often the case, those elongated sections are thickened in that area.

FIGS. 12 and 13 illustrate yet another embodiment in which the clip is formed with hexagonal enlarged parts 4' and are otherwise like FIGS. 6-8. FIGS. 14 and 15 illustrate still another embodiment.

As has been indicated, the primary use for an attachment of the type disclosed is to secure two objects together - e.g., a tag to a garment or a pair of shoes to one another - but it can also be used as a type of identification or with appropriate data imprinted on its enlarged part 4, to serve as a label or tag. Consequently in FIGS. 1-4 the attachments have been shown in association with only a single object O, but it will be understood that the attachment can be used in conjunction with more than one object. Attachments of the type under consideration are commercially provided with elongated sections 6 of many different lengths, some short and some long. The particular length disclosed for the elongated section 6 is by way of example only. Likewise the shapes and sizes of the penetrating parts 2 and enlarge parts 4 may widely vary.

Using the present invention clips of attachments may be formed with the same facility and as comparable attachments now on the market, yet the clips thus formed will have the very significant advantage, over those previously available, that to avoid irregular stubs in separation which could cause snagging, by leaving a jagged edge on the then converter between the protuberance of the enlarged parts. The operational design of the protuberances tends to completely eliminate any stubs and thus prevent snagging.

While only a limited number of embodiments have been specifically disclosed, it will be apparent that many variations may be made, all within the scope of the invention as defined in the claims.

I Claim:

1. A clip of a plurality of connected attachments, each adapted to be engaged with an object and comprising

an object-penetrating part, an enlarged part, and an elongated section connecting said parts;

severable means normally and operatively connecting the penetrating parts to one another in spaced relationship;

the elongated sections extending from said penetrating parts, and

biaxially different and readily severable securing means interposed between and connected to said attachments remote from said severable means for securing said attachments together.

2. The clip of Claim 1, in which said securing means is interposed between and connected to said enlarged parts.

3. The clip of Claim 2 in which said securing means is so construed as to be more readily severable in torsion than in tension with a portion that is completely severable in torsion.

4. The clip of Claim 2 in which said securing means includes a length of material of rectangular cross section which has substantially greater resistance to breaking when tensioned than when twisted.

5. The clip of Claim 3 in which said enlarged parts comprise elements arranged essentially parallel to one another with facing surfaces, said securing means being interposed between and secured to said facing surfaces.

6. The clip of Claim 5, in which said enlarged parts comprise elements arranged spaced from one another by a given distance and with facing surfaces, said securing means comprising opposed asymmetric protrusions from said surfaces are spaced from one another by a distance less than said given distance, and joined by a relatively thinner length of material having a thickness and length which have a substantially greater resistance to breaking when tensioned than when twisted.

7. The clip of Claim 1 in which said securing means is more readily severable in torsion than in tension.

8. The clip of Claim 1 in which said securing means is of a material and dimensioned to have substantially greater resistance to breaking when tensioned than when twisted.

9. The clip of Claim 1, in which said clip is constituted by a one-piece assembly of molded plastic material.

10. The method of attaching to an object one of a plurality of attachments which are assembled into a clip by being secured together at first and second points spaced along their length, which method comprises:

(a) freeing the attachment from said clip at said first point and engaging said attachment with said object while said attachment remains secured to said clip at said second point, and

(b) thereafter separating said attachment from said clip at said second point without leaving an irregular stub at said secured point.

11. The method of Claim 10, in which (b) is accomplished by rotating said attachment relative to said clip, thereby to exert a substantial torsional force on the means securing said attachment to said clip at said second point.

12. The method of attaching to an object one of a plurality of attachments which are assembled into a clip by being secured together at first and second points spaced along their length, said attachments comprising an object-engaging part, an enlarged part, and a section connecting said parts, said first point being located relatively close to said object-engaging part and said second point being located relatively remote from said object-engaging part, which method comprises:

(a) freeing the attachment from said clip at said first point and engaging the object-engaging part of said attachment with said object while said attachment remains secured to said clip at said second point, and

(b) thereafter separating said attachment from said clip at said second point without leaving an irregular stub at said second point.

13. The method of Claim 12 in which step (b) is accomplished by rotating said attachment relative to said clip, thereby to exert a substantial torsional force on the means securing said attachment to said clip at said second point.

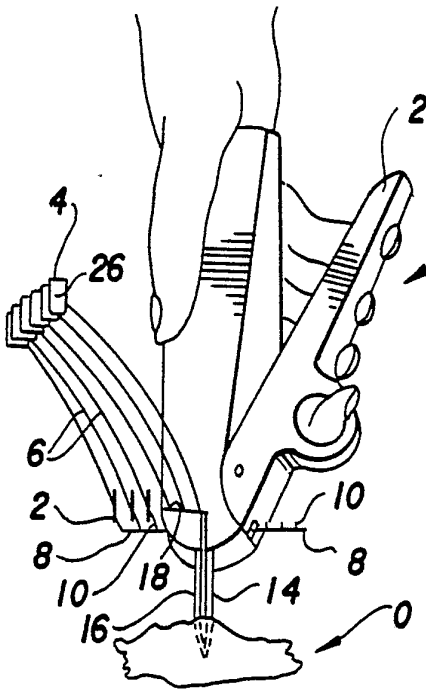


FIG. 1

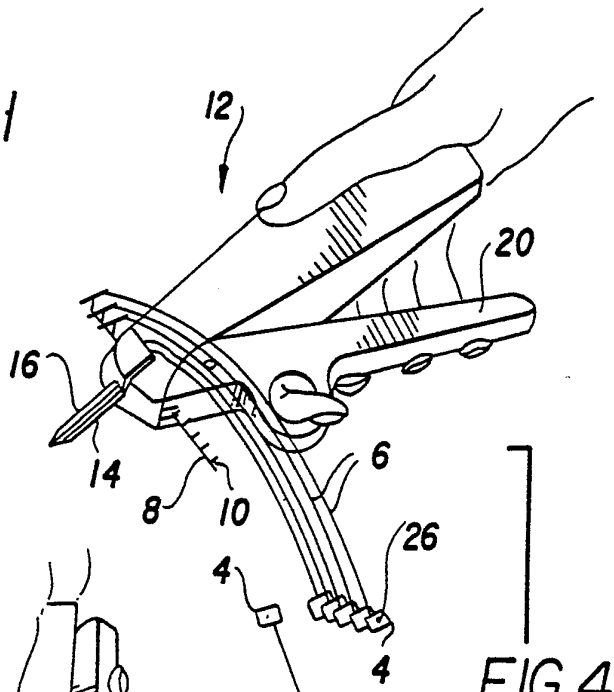
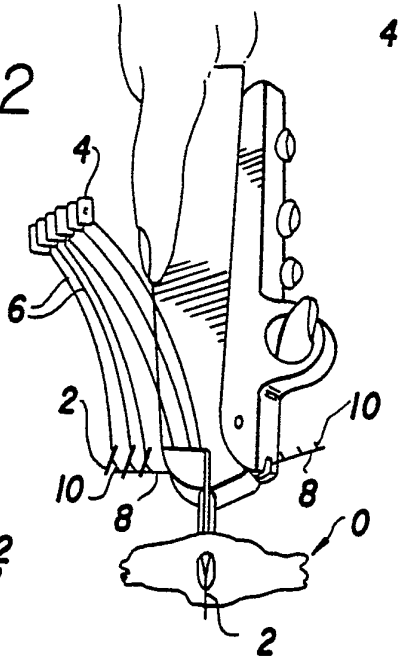


FIG. 2



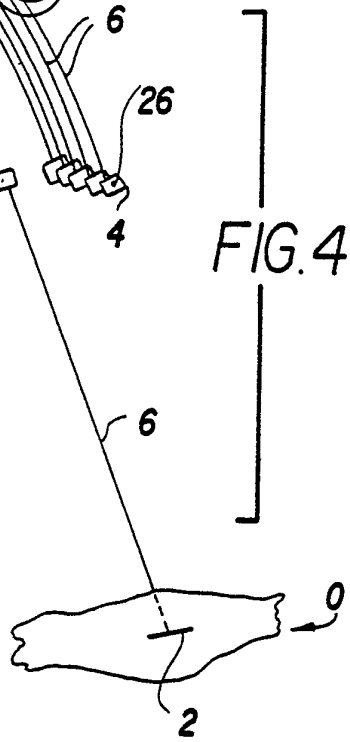


FIG. 4

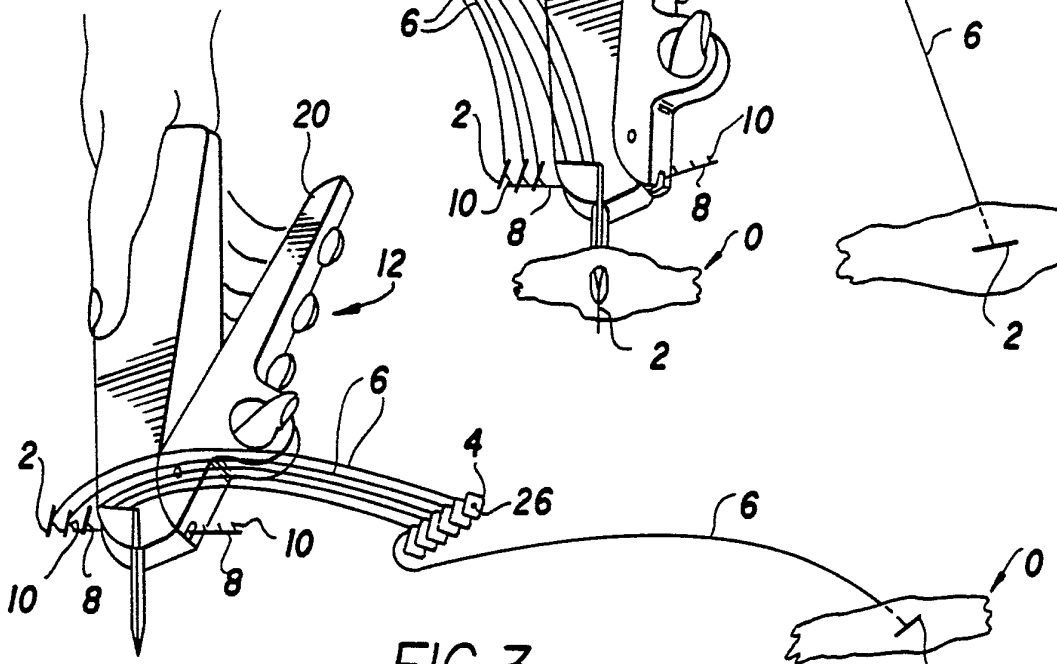


FIG. 3

FIG. 5

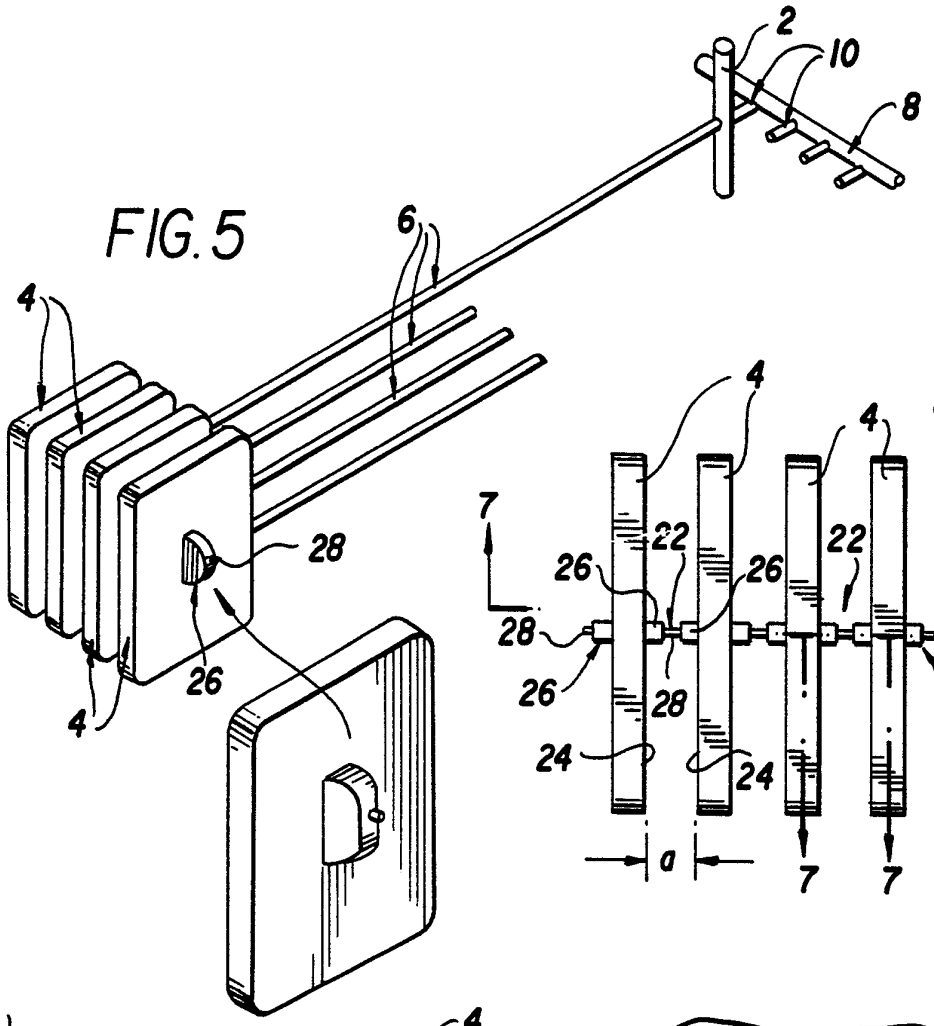
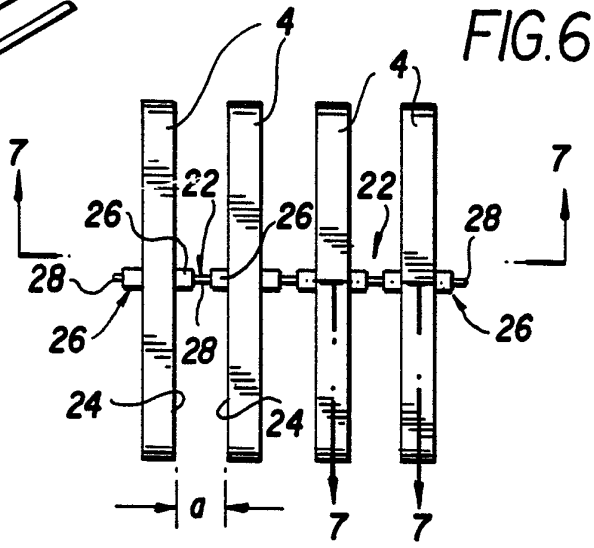


FIG. 6



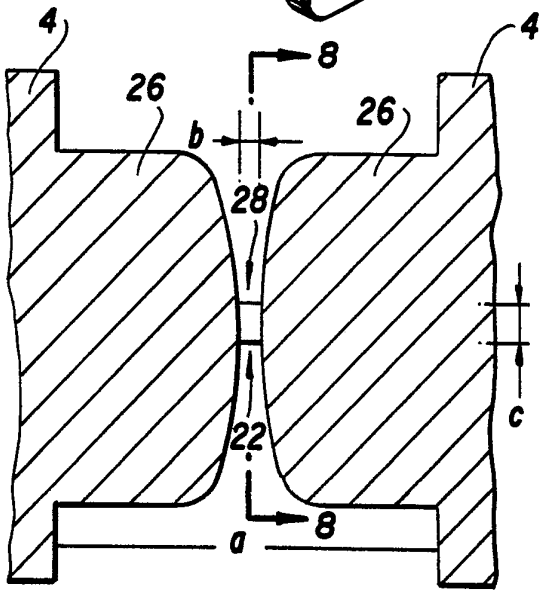


FIG. 7

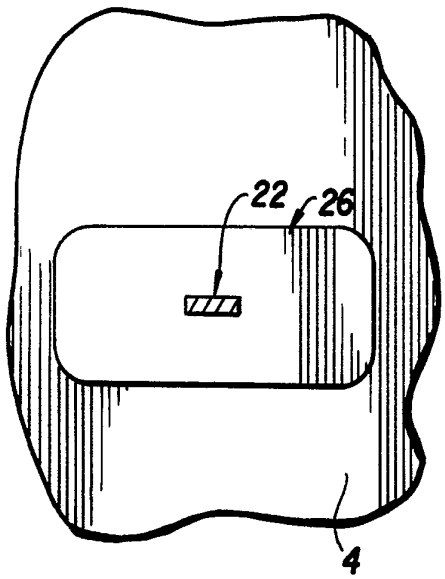


FIG. 8

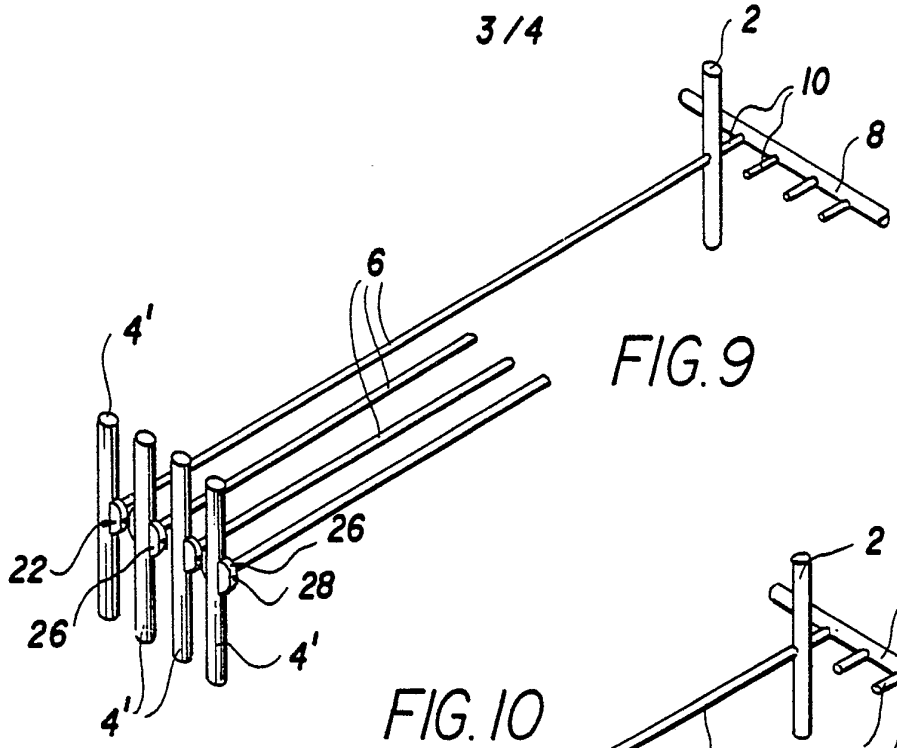


FIG. 9

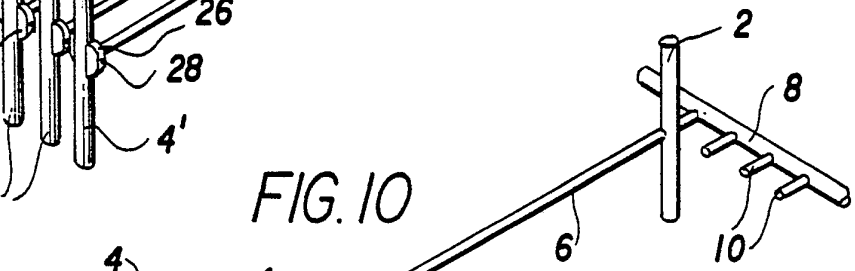
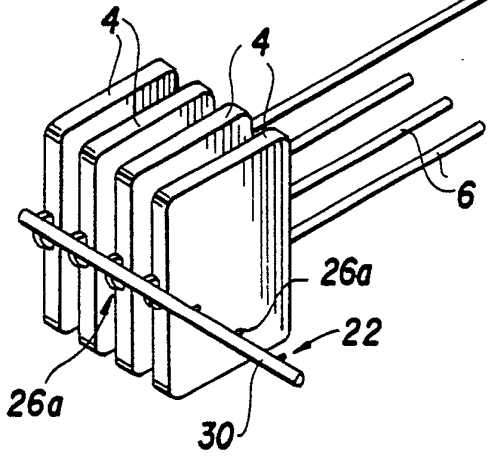


FIG. 10



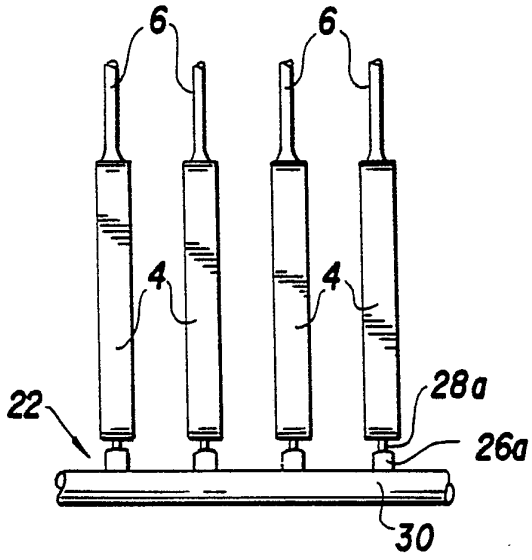


FIG. 11

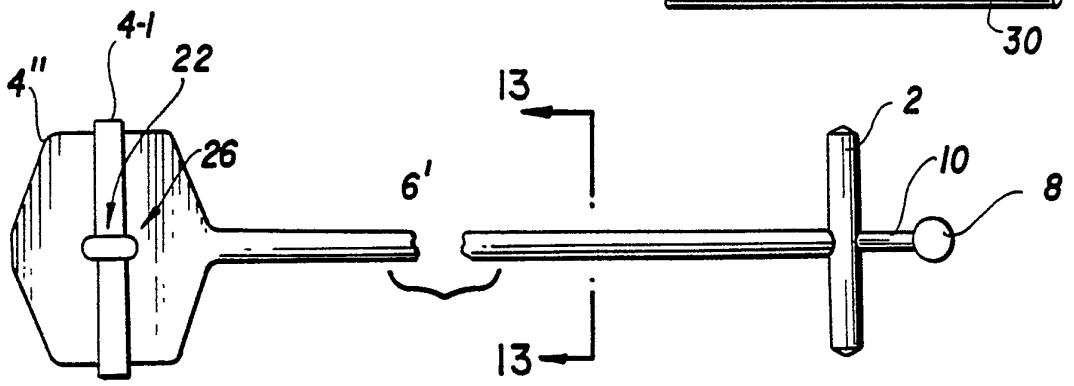


FIG. 12

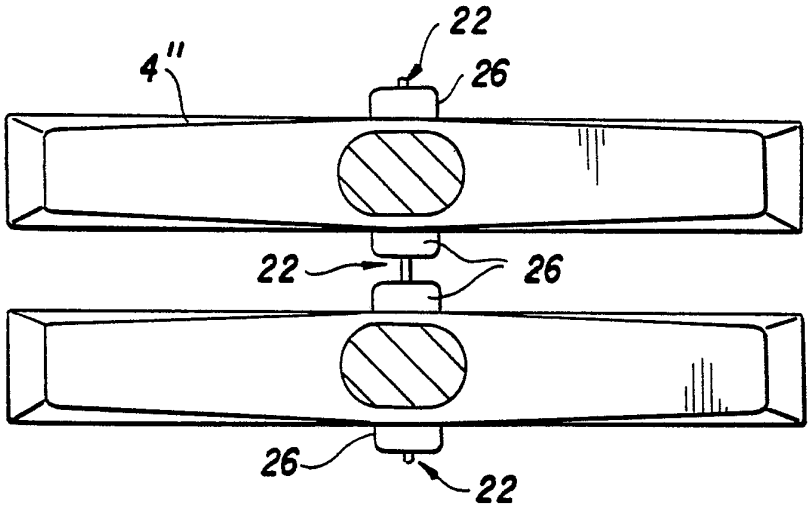


FIG. 13

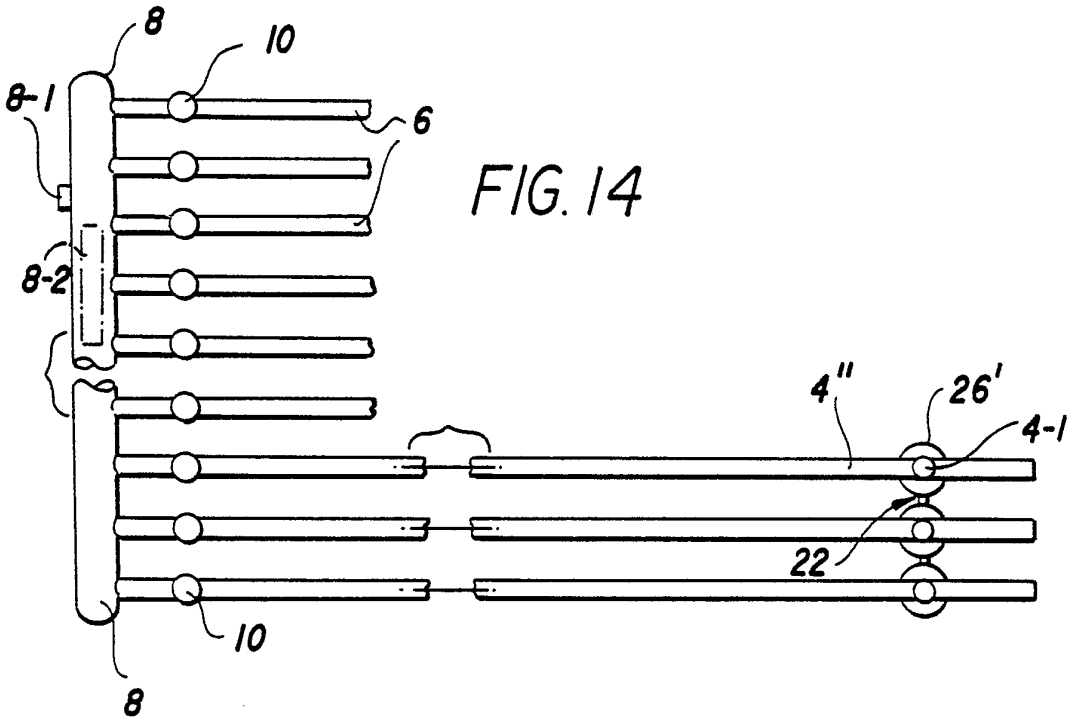


FIG. 14

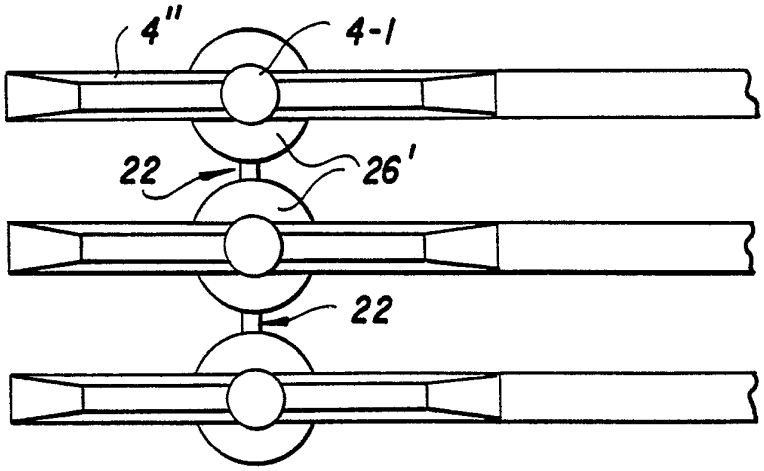


FIG. 15

INTERNATIONAL SEARCH REPORT

International Application No PCT/US 87/00130

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [6]

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC[4]: G 09 F 3/14; B 65 C 7/00

II. FIELDS SEARCHED

Minimum Documentation Searched [7]

Classification System	Classification Symbols
IPC[4]	G 09 F

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched [8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT [9]

Category *	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No. [13]
X	US, A, 3733657 (DENNISON MANUFACTURING CO.) 22 May 1973 see figures 1-13; columns 4-8 cited in the application	1-13
X	GB, A, 2083539 (TOSKA CO. LTD) 24 March 1982 see figures 1-10; page 2, lines 125-130; page 3, lines 1-100; page 4, lines 1-41	1-13
X	GB, A, 2003968 (DENNISON MANUFACTURING CO.) 21 March 1970 see figures 1-8; page 2, lines 68-126	1,2,9
A		10,12
X	GB, A, 1514083 (JAPAN BANO'K CO. LTD) 14 June 1978 see figures 6-9; page 2, lines 16-47	1,2,5,9,10, 12
A	US, A, 4263730 (BEN CLEMENTS & SONS, INC.) 28 April 1981	

* Special categories of cited documents: [10]

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
22nd April 1987	25 MAY 1987
International Searching Authority	**Signature of Authorized Officer**
EUROPEAN PATENT OFFICE	M. VAN MOL

International Application No. PCT/US 87/00130

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)

Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
A	US, A, 4534464 (NYPRO INC.) 13 August 1985	

ANNEX T THE INTERNATIONAL SEARCH REPORT ON

INTERNATIONAL APPLICATION NO. PCT/US 87/00130 (SA 15918)

This Annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 29/04/87

The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
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