A plastics pipe clip has a pipe-receiving portion (14) comprising two fingers (18, 24), one more flexible than the other, the more flexible one (24) having its free end connected to a body portion of the clip by a flexible strap (26) of such a length that the finger (24) will yield to admit a pipe (P) but be held by the strap (26) against releasing it.
FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

<table>
<thead>
<tr>
<th>Code</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Austria</td>
</tr>
<tr>
<td>AU</td>
<td>Australia</td>
</tr>
<tr>
<td>BE</td>
<td>Belgium</td>
</tr>
<tr>
<td>BR</td>
<td>Brazil</td>
</tr>
<tr>
<td>CF</td>
<td>Central African Republic</td>
</tr>
<tr>
<td>CG</td>
<td>Congo</td>
</tr>
<tr>
<td>CH</td>
<td>Switzerland</td>
</tr>
<tr>
<td>CM</td>
<td>Cameroon</td>
</tr>
<tr>
<td>DE</td>
<td>Germany, Federal Republic of</td>
</tr>
<tr>
<td>DK</td>
<td>Denmark</td>
</tr>
<tr>
<td>FI</td>
<td>Finland</td>
</tr>
<tr>
<td>FR</td>
<td>France</td>
</tr>
<tr>
<td>GA</td>
<td>Gabon</td>
</tr>
<tr>
<td>GB</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>HU</td>
<td>Hungary</td>
</tr>
<tr>
<td>JP</td>
<td>Japan</td>
</tr>
<tr>
<td>KP</td>
<td>Democratic People's Republic of Korea</td>
</tr>
<tr>
<td>LI</td>
<td>Liechtenstein</td>
</tr>
<tr>
<td>LK</td>
<td>Sri Lanka</td>
</tr>
<tr>
<td>LU</td>
<td>Luxembourg</td>
</tr>
<tr>
<td>MC</td>
<td>Monaco</td>
</tr>
<tr>
<td>MG</td>
<td>Madagascar</td>
</tr>
<tr>
<td>MW</td>
<td>Malawi</td>
</tr>
<tr>
<td>NL</td>
<td>Netherlands</td>
</tr>
<tr>
<td>NO</td>
<td>Norway</td>
</tr>
<tr>
<td>RO</td>
<td>Romania</td>
</tr>
<tr>
<td>SE</td>
<td>Sweden</td>
</tr>
<tr>
<td>SN</td>
<td>Senegal</td>
</tr>
<tr>
<td>SU</td>
<td>Soviet Union</td>
</tr>
<tr>
<td>TD</td>
<td>Chad</td>
</tr>
<tr>
<td>TG</td>
<td>Togo</td>
</tr>
<tr>
<td>US</td>
<td>United States of America</td>
</tr>
</tbody>
</table>
1.

**Plastics Clips**

This invention is concerned with plastics clips of a type for resiliently holding an elongated article (e.g. a pipe or cable) having means to enable the clip to be fixed to a support and an article-receiving portion which is arranged to extend round more than 180° of the article and provides a seat against which the article rests and two arms disposed to bear on the article at either side of the seat.

Such a clip, moulded in thermoplastic resinous material, commonly takes the form in which the article-receiving portion provides a continuous arcuate surface embracing more than 180° of the article, introduction of the article being permitted by the resilience of the material from which the clip is moulded. It is generally the case that the article is as easy or difficult to dislodge as it is to assemble, and therefore, if the clip is designed to give a high degree of resistance to withdrawal of the article, the article is usually difficult to assemble. Such difficulty can be especially undesirable in the case of plastics pipes, for example for break fluid, such as are commonly used in motor vehicles and which, while requiring to be firmly anchored, would be subject to the risk of damage, with potentially serious consequences, if they are too difficult to assemble.

It is accordingly an object of the invention to provide an improved clip suitable for plastics pipes which,
while capable of firmly anchoring the pipe, involves little risk of the pipe being damaged on assembly.

The foregoing object is achieved in accordance with the invention in that one of the arms has a yieldable article-engaging finger normally disposed in an article-holding position and arranged to be deflected towards said seat when an article is introduced to the clip and to revert to its article holding position after the widest part of the article has passed it, and in that a flexible strap of a length substantially the same as that of the periphery of the article which lies between said finger and said seat extends between said seat and the tip of the finger, the strap permitting the finger to deflect as aforesaid when an article is introduced to the clip but resisting deflection of the finger away from the seat from its article-holding position such as would release the article.

Preferably, in a clip in accordance with the invention, the strap extends about an arc of a radius slightly smaller than that of a cylindrical pipe for which the article-engaging portion of the clip is intended so that the strap is held in tension when a pipe is in position, thus to ensure that vibration of the pipe is absorbed by the clip. It is also preferred that the tip of the finger has a rib to engage the article, the rib running parallel to the article.

A clip in accordance with the invention may conveniently have a projection extending from the arm which is less yielding than the finger to act as a guide to facilitate assembly of the article. Such an arm is preferably also sufficiently yieldable for the projection to be used, by application of a thumb thereto, to assist opening of the clip to enable an article to be removed without damage. Preferably, such an arm with its projection lies adjacent the support to which the clip is secured.

A clip in accordance with the invention may be provided with any suitable means to secure it to a support, e.g. a longitudinally grooved hole through it to enable it to receive grippingly a threaded stud welded to a support,
and two article-engaging portions symmetrically disposed on opposite sides of said hole with their less yielding arms adjacent the support.

There now follows a description of a plastics clip embodying the invention and selected to illustrate the invention by way of example and not of limitation.

In the accompanying drawings:

Figure 1 is a view in side elevation of a clip in accordance with the invention and illustrative thereof by way of example; and

Figure 2 is a plan view of the clip shown in Figure 1.

The illustrative clip shown in the drawings is made by injection moulding in any suitable resilient thermoplastic resinous material, for example polyacetal resin. The clip has a body portion 10 having means, exemplified by a longitudinally grooved hole 12 extending though the body portion of dimensions suitable for gripping a welded stud T having a screw thread or annular grooves with steep ridges inbetween, to enable the clip to be secured to a support S.

The illustrative clip is designed for holding two break fluid pipes P₁, P₂ of equal diameters and is accordingly shaped symmetrically on either side of the body portion 10 with pipe-engaging portions 14, 14. Each portion 14 has a seat bounding the body portion and presenting an arcuate surface of the same radius as the pipe it is intended to engage, and this surface continues along a lower, yieldable, arm 18 which terminates in a projection 20. At the other side of the seat, an upper arm 22 projects from the body portion 10 and includes a depending, flexible and resilient finger 24 arranged to bear upon a pipe in the clip at such a locality that the arm 18, seat 16 and finger 24 embrace more than 180° of the pipe, and preferably more than 270°; in the embodiment shown in the drawings they embrace about 300° of the pipe. From the tip of the finger 24 to the seat 16, there extends an arcuate strap 26 which provides an inner surface continuous with that of
the seat 16 but 0.005 - 0.01 inches smaller in radius. The strap is thin, compared with the lower arm 18, and because of its slightly smaller radius, is held in tension by a pipe accommodated in the portion 14. The finger has a ridge 28 extending along most of its length parallel to the pipe, where it engages the pipe. The strap 26 has a central strengthening rib 30 running along its outer surface.

Assembling of a pipe e.g. P1, in the illustrative clip will now be described. The lower arm 18 is less yieldable than the finger 24, and with its projection 20 guides a pipe P1 into the embrace of the portion 14 and into engagement with the seat 12. Meanwhile, the finger 24 is deflected towards the seat, the flexible strap bending to allow it to do so, until the widest part of the pipe P1 has passed it, and it is restored to its initial position. With the finger 24 thus restored to the position shown in Figure 1, the pipe P1 is held tightly because first the portion 14 embraces the pipe for 300° around its surface and secondly because, the strap 26 being in its natural condition slightly smaller in radius than the pipe, when the pipe P1 is forced into it the strap is in tension. The clip is thus able to absorb vibration of the pipe P1. Moreover, the strap 26 prevents the finger 24 from being deflected away from the seat 12. Thus, while it is relatively easy to assemble a pipe P1 in the portion 14, it is much more difficult to remove it.

However, in addition to guiding a pipe P1 into the portion 14, the projection 20 can readily be depressed by the thumb to facilitate release of the pipe P1 from the clip.
Claims:

1. A plastics clip of a type for resiliently holding an elongated article (e.g. a pipe or cable) having means to enable the clip to be fixed to a support and an article-receiving portion which is arranged to extend round more than 180° of the article and provides a seat against which the article rests and two arms disposed to bear on the article at either side of the seat, characterised in that one of the arms has a yieldable article-engaging finger 24 normally disposed in an article-holding position and arranged to be deflected towards said seat 16 when an article is introduced to the clip and to revert to its article-holding position after the widest part of the article has passed it, and in that a flexible strap 26 of a length substantially the same as that of the periphery of the article which lies between said finger 24 and said seat 16 extends between said seat 16 and the tip of the finger, the strap 26 permitting the finger 24 to deflect as afore-said when an article is introduced to the clip but resisting deflection of the finger 24 away from the seat 16 from its article-holding position such as would release the article.

2. A clip according to claim 2 further characterised in that the strap 26 extends about an arc of a radius slightly smaller than that of a cylindrical pipe for which the article-engaging portion of the clip is intended.

3. A clip according to claim 2 further characterised in that the tip of the finger 24 has a rib 28 to engage the article, the rib 28 running parallel to the article.

4. A clip according to any one of the preceding claims in which the other arm 18 of the clip is less yielding than the finger 24, and has a projection 20 to guide an article into said article-engaging portion 14.
5. A clip according to claim 4 further characterised in that it has a longitudinally grooved hole 12 through it to enable it to receive grippingly a threaded stud welded to a support, and two article-engaging portions 14, 14 as aforesaid symmetrically disposed at opposite sides of said hole 12 with their less yielding arms 18 adjacent the support.
# INTERNATIONAL SEARCH REPORT

**International Application No:** PCT/GB 81/00282

## I. CLASSIFICATION OF SUBJECT MATTER

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

IPC: F 16 L 3/12; F 16 L 3/22

## II. FIELDS SEARCHED

Minimum Documentation Searched

<table>
<thead>
<tr>
<th>Classification System</th>
<th>Classification Symbols</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPC</td>
<td>F 16 B; F 16 L; H 02 G</td>
</tr>
</tbody>
</table>

Documentation Searched other than Minimum Documentation to the extent that such Documents are Included in the Fields Searched:

## III. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of Document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to Claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US, A, 2166916 (LOMBARD), 18 July 1939, see page 3, left-hand column, line 28 - right-hand column, line 12</td>
<td>1, 4</td>
</tr>
<tr>
<td>Y</td>
<td>---</td>
<td>2, 3, 5</td>
</tr>
<tr>
<td>Y</td>
<td>DE, A, 2130354 (TOX-DUBEL-WERK), 29 June 1972, see column 1, lines 48-54 and column 3, line 10 - column 4, line 25, figure 4 &amp; GB, A, 1328600</td>
<td>1, 2</td>
</tr>
<tr>
<td>Y</td>
<td>GB, A, 1155472 (CARR FASTENER), 18 June 1969, see page 1, lines 80-82</td>
<td>3</td>
</tr>
<tr>
<td>Y</td>
<td>DE, A, 2908120 (TUCKER), 11 September 1980, see page 9, line 20 - page 11, line 22</td>
<td>5</td>
</tr>
<tr>
<td>P/X</td>
<td>FR, A, 2474134 (UNITED-CARR), 24 July 1981, see page 6, line 10 - page 8, line 21 &amp; GB, A, 2079360 &amp; DE, A, 3002031</td>
<td>1, 2, 4, 5</td>
</tr>
</tbody>
</table>

* Special categories of cited documents:
  - "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
  - "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
  - "O" document referring to an oral disclosure, use, exhibition or other means
  - "P" document published prior to the international filing date but later than the priority date claimed

**"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:** 22nd March 1982

**Date of Mailing of this International Search Report:** 1st April 1982

**International Searching Authority:** EUROPEAN PATENT OFFICE

**Signature of Authorized Officer:**

G.L.M. Kruidenberg
<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of Document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to Claim No</th>
</tr>
</thead>
<tbody>
<tr>
<td>P/A</td>
<td>FR, A, 2469636 (RAYMOND), 22 May 1981, see page 3, line 17 - page 6, line 22 &amp; GB, A, 2066887 &amp; DE, A, 2946143</td>
<td>1</td>
</tr>
</tbody>
</table>