

"DEVICE FOR STRAPPING CABLES, PIPES OR OTHER SIMILAR ITEMS,
TOGETHER OR TO SUPPORTS"

1 This invention relates to a device for strapping
cables, pipes or other similar items, together or
to a support, and which is intended to be assembled
around the cables or the like without the use of
5 tools, it being sufficient to assemble the device
by pulling the strapping handtight, and thus avoiding
the possibility of over-tensioning the strap.

From one aspect the invention consists in a
strapping device comprising a strap constituted by
10 a strip of bendable material attached at one end
to or integral with a buckle plate which is adapted
to secure the other end of the strip after the strip
has been wrapped tight around the members to be strapped,
wherein the buckle plate has a bridge portion which
15 is wider than the width of the strip, the buckle
plate also including means for holding down the other
end of the strip after it has been passed under the
bridge portion and has been bent back over the bridge
portion, and wherein the holding down means comprises
20 two fixed ears raised or folded over above the surface
of the plate to form a passage therebeneath substantially
in alignment with the bent back end portion of the
strip, said two fixed ears having a gap therebetween
sufficient to permit the thickness of the strip to
25 be passed therethrough, the minimum distance between
the connections of the fixed ears to the buckle plate
being at least approximately twice the width of the
strip.

From another aspect the invention consists in
30 a strapping device comprising a strap constituted

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1 by a strip of bendable metal extending from a buckle plate
having a bridge portion which is spaced above the
surface of the plate and forms a passage therebeneath
through which the strip can be passed, and also having
5 two fixed ears spaced above the surface of the plate
and forming a passage therebeneath substantially
in alignment with the passage beneath the bridge
portion, said two fixed ears having a gap therebetween
sufficient to permit the thickness of the strip to
10 be passed therethrough and being connected to the
buckle plate at locations such that the strip can
be inserted beneath the fixed ears by first tilting
the strip slightly about its axis and then by the
sideways insertion of a side edge thereof through
15 said gap and beneath one of the ears until the other
side edge of the strip is clear of the other ear,
and then pushing the strip sideways in the opposite
direction until its said other side edge lies beneath
said second ear.

20 In order that the invention may be more clearly
understood, reference will now be made to the accompanying
drawing, in which:-

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1 Fig. 1 is a perspective view of one embodiment of the device, according to the invention, shown assembled around and tying together three electric cables,

 Fig. 2 shows the strap of Fig. 1,

5 Fig. 3 is a plan view of the buckle plate shown in Fig. 1,

 Fig. 4 is a section through Fig. 3 taken along the line Z-Z,

 Fig. 5 is a perspective view of an alternative
10 embodiment,

 Fig. 6 is a perspective view of a further embodiment.

 Referring to Figs. 1 to 4, the device comprises a strap 1 of bendable strip metal, conveniently 0.5mm
15 thick type 316 stainless steel, and a buckle plate 2, conveniently made of the same material 0.889mm thick, and stamped to form a raised bridge portion 3 providing a passage beneath the bridge which is wider than the
20 width of the strip steel forming the strap, the underside of the flat top of the bridge preferably being spaced from the surface of the plate by slightly less than the thickness of the strip.

 Slots 5, which may be defined by extensions of the opening produced by stamping up the bridge portion
25 3, are formed at opposite ends of the plate. Opposite ends of the slots may be formed downwards as shown to assist in pushing the strip through the bridge.

 The buckle plate is also formed with a second raised bridge portion which is divided approximately
30 along its centre line to form two fixed ears 3a' and 3a" and is made wider than the bridge 3.

 To assemble the device around, for example a group of electric cables 6 to tie them together, one

1 end of the strip 1 is passed through the slot 5 nearest
an end of the plate, from the raised bridge side of
the buckle plate, for a distance of about 2.5cms, and
is folded back on the strip. The strip attached to
5 the buckle plate is then wrapped around the cables 6
with the bridge portion 3 facing away from the cables,
and the free end of the strip 1 is threaded under the
ears 3a' and 3a" and through the passage under the
bridge 3. Holding the buckle plate 2 firmly to prevent
10 the assembly turning around the cables, the free end
of the strip is pulled until the strip is tight, and
at the same time the projecting end of the strip is
bent back over the bridge 3 and the ears. The free
end of the strip is then first tilted slightly about
15 its axis and is slid through the gap between the fixed
ears 3a' and 3a" with its edge inserted beneath one of
the ears. It is then pushed sideways until its other
edge is clear of the end of the second ear, where-
upon the strip is pushed sideways in the opposite direc-
20 tion until its said other edge is engaged below said
second ear and the strip is centralised beneath the
fixed ears. The strip and buckle are now secured.
The fixing and securing of the strapping is thus a
simple operation to perform, even under difficult
25 conditions. No bending of the ears is necessary, and
consequently damage to the surface finish on the buckle
and strip is minimised. To facilitate inserting the
free end of the strip beneath the ears, the overall
width between their connections to the buckle 2 should be
30 approximately twice the width of the strip. For example,
for a $\frac{1}{4}$ inch (6.3mm) wide strip of 26SWG (0.46mm)
stainless steel, the internal width of the bridge 3 can

1 be 7/16 inch (11.2mm) and of the bridge 3a 9/16 inch (14.3mm)
The free ends of the ears may be bent slightly away
from the buckle as shown at 3b in Fig. 4, to form lead-
in portions facilitating sideways insertion of the strip
5 beneath the ears.

While particular embodiments have been described,
it will be understood that various modifications may
be made without departing from the scope of the
invention. For example, instead of stainless steel,
10 the components may be made of mild steel or other
suitable material. The strips may be supplied in
different lengths, e.g. nominally 30, 45, 60 and 75cms,
their actual lengths being greater by about 2.54cms
to allow for the folded-under end required for anchoring
15 the strip to the buckle plate. Or a strap may be
attached to the buckle plate by welding, or even by
stamping it integrally with the buckle plate as shown
in Figure 5, in which a buckle plate 2 of the construct-
ion shown in Figure 4 is made in one piece with the
20 strip 1. Instead of stamping up the fixed ears 3a'
and 3a" from the centre of the buckle plate, they may
be constituted by ears projecting from the edge of
the buckle plate and folded back inwards to their
fixed positions with the gap therebetween and the
25 appropriate spacing between their points of attachment
to the plate.

Figure 6 shows a modified construction which
is particularly suitable for smaller and lighter
strapping. In this embodiment in which the buckle
30 portion 2 is integral with the strip 1, both the bridge
3b and the ears 3b' and 3b" are formed by folding up
ear portions from opposite sides of the buckle portion.

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1 The ear portions forming the bridge 3_b may be shaped to form a recess 7 for centralising the strip when it is folded back over the bridge 3_b.

5 The buckle portion of the embodiment of Figure 6 can also be made as a separate buckle plate to which the end of the strap 1 can be attached. It is not essential for the bridge 3 or 3_b to be raised above the main body or base of the buckle or buckle portion; it may lie substantially flush with the remainder of the
10 plate forming the buckle.



CLAIMS

- 1 1. A strapping device comprising a strap constituted
by a strip of bendable material attached at one end
to or integral with a buckle plate which is adapted
to secure the other end of the strip after the strip
5 has been wrapped tight around the members to be strapped,
wherein the buckle plate has a bridge portion which
is wider than the width of the strip, the buckle
plate also including means for holding down the other
end of the strip after it has been passed under the
10 bridge portion and has been bent back over the bridge
portion, and wherein the holding down means comprises
two fixed ears raised or folded over above the surface
of the plate to form a passage therebeneath substantially
in alignment with the bent back end portion of the
15 strip, said two fixed ears having a gap therebetween
sufficient to permit the thickness of the strip to
be passed therethrough, the minimum distance between
the connections of the fixed ears to the buckle plate
being at least approximately twice the width of the
20 strip.
2. A device according to claim 1, wherein the bridge
portion is raised above the surface of the buckle
plate.
3. A device according to claim 2, wherein the buckle
25 plate is stamped out of sheet metal and the said
one end of the strip is attached to the buckle by
passing a portion of the strip at said one end through
a slot in the buckle defined by one end of the opening
formed by stamping up the buckle plate to form the
30 bridge portion, and bending said end portion back
to underlie a portion of the strip which is wrapped
around the members to be strapped.



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- 1 4. A device according to claim 1, 2 or 3, wherein
the buckle plate is stamped out of sheet metal and
the fixed ears are stamped up out of the buckle plate
to form a second raised bridge portion divided by
5 the gap through which the bent back portion of the
strip is inserted.
5. A device according to claims 1, 2 or 3, wherein
the buckle plate is stamped out of sheet metal with
ears on opposite sides of the buckle plate, the said
10 ears being then folded over to form fixed ears spaced
above the surface of the plate with the gap therebetween
through which the bent back portion of the strip
is inserted.
6. A strapping device comprising a strap constituted
15 by a strip of bendable metal extending from a buckle
plate having a bridge portion which is spaced above
the surface of the plate and forms a passage therebeneath
through which the strip can be passed, and also having
two fixed ears spaced above the surface of the plate
20 and forming a passage therebeneath substantially
in alignment with the passage beneath the bridge
portion, said two fixed ears having a gap therebetween
sufficient to permit the thickness of the strip to
be passed therethrough and being connected to the
25 buckle plate at locations such that the strip can
be inserted beneath the fixed ears by first tilting
the strip slightly about its axis and then by the
sideways insertion of a side edge thereof through
said gap and beneath one of the ears until the other
30 side edge of the strip is clear of the other ear,
and then pushing the strip sideways in the opposite
direction until its said other side edge lies beneath
said second ear.



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- 1 7. A device according to claim 1,2,3,4 ,5 or 6,
wherein the free ends of the ears are inclined away
from the surface of the buckle plate to facilitate
sideways insertion of the strip beneath the ears.
- 5 8. A strapping device comprising a strap constituted
by a strip of bendable material attached at one end
to a buckle plate, substantially as described with
reference to Figures 1 to 4 of the drawing.
- 10 9. A strapping device comprising a strap constituted
by a strip of bendable material integral with a buckle
plate, substantially as described with reference
to Figure 5 of the drawing.
- 15 10. A strapping device comprising a strap constituted
by a strip of bendable material integral with a buckle
plate, substantially as described with reference
to Figure 6 of the drawing.
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