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(54) **Method and apparatus for toughening metal strap buckles**

(57) The invention relates to a metal tie buckle (1) made from a single piece of rounded wire that has been bent into a predetermined configuration, wherein two pairs of strap engaging arms (3,5,9,13) that are essentially parallel to one another are provided for securing the buckle (1) to the strap (23). The buckle (1) has been treated with a hardening process, such as carburizing,

carbonitriding, nitriding and induction hardening, that strengthens and toughens the buckle (1). This helps to keep the arms (3,5,9,13) parallel and prevents the propensity of the buckle (1) to achieve plastic deformation, which in turn helps to prevent the strap (23) from being pinched, or otherwise causing uneven stress on the strap (23), which could result in premature failure of the strap (23).

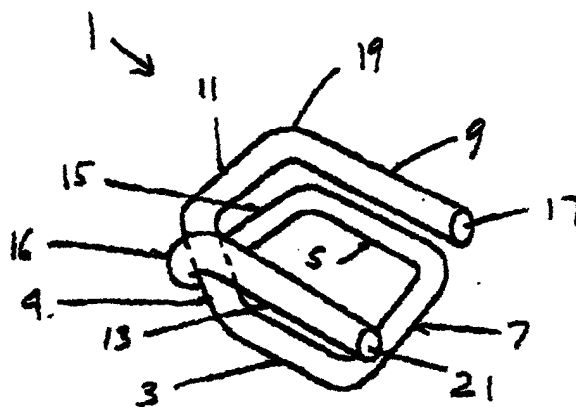


FIG. 1



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 01 10 6286

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The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 21 March 2003	Examiner Nistor, L
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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