

FORM 1

COMMONWEALTH OF AUSTRALIA
PATENTS ACT 1952

606785

APPLICATION ACCEPTED AND AMENDED
19.11.90
ALLOWED

APPLICATION FOR A STANDARD PATENT

I/We,

SECTION 34(4)(a) DIRECTION SEE FOLIO 3
NAME DIRECTED THOMASTIK-INFELD GESellschaft M.B.H.
Pichlgasse 27, A-1050 Vienna, Austria

hereby apply for the grant of a standard patent for an
invention entitled:



STRING FOR MUSICAL INSTRUMENTS

which is described in the accompanying complete specification

Details of basic application(s):

Number of basic application	Name of Convention country in which basic application was filed	Date of basic application
A 500/88	AT	26 FEB 88

My/our address for service is care of GRIFFITH HACK & CO.,
Patent Attorneys, 601 St. Kilda Road, Melbourne 3004,
Victoria, Australia.

DATED this 24th day of February 1989

DR. THOMASTIK UND MITARBEITER
OFFENE HANDELSGESELLSCHAFT

GRIFFITH HACK & CO.

M006903 24/02/89

TO: The Commissioner of Patents.

Australian Patent Declaration Form

Forms 7 and 8

COMMONWEALTH OF AUSTRALIA

Patents Act 1952

DECLARATION IN SUPPORT OF A CONVENTION OR NON-CONVENTION
APPLICATION FOR A PATENT OR A PATENT OF ADDITION

In support of the application No. 30720/89 made by

THOMASTIK-INFELD GmbH

of Diehlgasse 27, A1050 Wien, Austria

for a patent for an invention entitled STRING FOR MUSICAL

INSTRUMENT

I, Peter INFELD
Diehlgasse 27
of A-1050 Wien (Österreich)

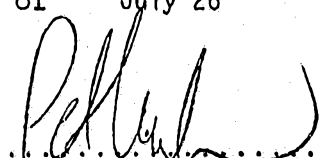
do solemnly and sincerely declare as follows:-

1. I am authorised by the abovementioned applicant to make this declaration on its behalf.
2. The basic application as defined by Section 141 of the Act was made in the following country or countries on the following date by the following applicant(s) namely:-
in Austria on February 26 1988
by DR. THOMASTIK UND MITARBEITER OFFENE HANDELSGESLLSCHAFT
3. The said basic application was the first application made in a Convention country in respect of the invention the subject of the application.
4. The actual inventor of the said invention is PETER INFELD, of Diehlgasse 27, A-1050 Wien, Austria
5. The facts upon which the applicant is entitled to make this application are as follows:-

The said Thomastik-Infield GmbH is the assignee of Dr. Thomastik Und Mitarbeiter Offene Handelsgesellschaft which was the assignee of the said Peter Infeld.

DECLARED at Vienna this day of July 26 1990.

THOMASTIK-INFELD
Gesellschaft m. b. H.
Postfach 26 - Diehlgasse 27
A-1051 Wien - Tel. 66 11 49


Peter INFELD

(12) PATENT ABRIDGMENT (11) Document No. AU-B-30720/89
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 606785

(54) Title
STRING FOR MUSICAL INSTRUMENTS

International Patent Classification(s)
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(22) Application Date : 24.02.89

(30) Priority Data

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500/88	26.02.88	AT AUSTRIA

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(71) Applicant(s)
THOMASTIK-INFELD GESELLSCHAFT M.B.H.

(72) Inventor(s)
PETER INFELD

(74) Attorney or Agent
GRIFFITH HACK & CO, GPO Box 1285K, MELBOURNE VIC 3001

(56) Prior Art Documents
US 4016714
US 4120146

(57) Claim

1. A string for musical instruments comprising a core consisting of a plurality of twisted aramide fibres and having a wound on wire covering therearound.

AUSTRALIA

PATENTS ACT 1952

Form 10

COMPLETE SPECIFICATION

(ORIGINAL)

FOR OFFICE USE

60 67 85

Short Title:

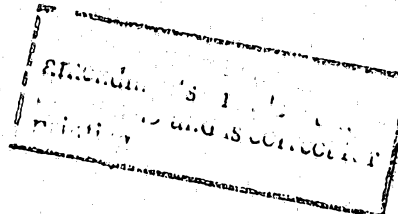
Int. Cl:

Application Number:
Lodged:

Complete Specification-Lodged:
Accepted:
Lapsed:
Published:

Priority:

Related Art:



TO BE COMPLETED BY APPLICANT

Name of Applicant: THOMASTIK-INFELD GESELLSCHAFT m.b.H.
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Actual Inventor:

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Melbourne, Victoria 3004,
Australia.



Complete Specification for the invention entitled:
STRING FOR MUSICAL INSTRUMENTS

The following statement is a full description of this invention
including the best method of performing it known to me:-

The present invention relates to strings for musical instruments, which consist of a core of polyamide fibres with a wound-on covering.

Fundamentally, every string for musical instruments at a given tension and free vibrational length (diapason) requires a specific total weight per unit length. This weight is divided between the weight for the core which takes up the tension of the string and the weight of the wound-on covering for modulation of the musical tone of the string. In the case of long thin high-pitched strings, if there is only a very small, or no, residual weight available for the covering, then the string cannot be tuned or modulated and it may not be possible to construct it at all because it would break.

The objective of the invention is to provide a core material for strings for musical instruments which will make it possible to economize on the core weight and to bestow particular tone on the strings.

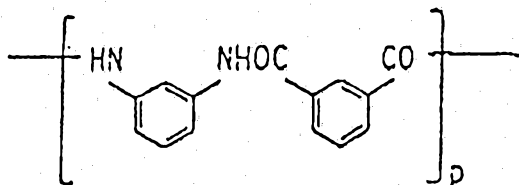
This objective can be achieved with strings for musical instruments with a core based on aramide fibres. Because of the very favourable properties of the aramide fibres used in accordance with the present invention, that is to say, their high specific mechanical strength, extremely high breaking length, high modulus of elasticity, small breaking elongation, great hardness, notch toughness and very small uptake of moisture it is possible, for example, to manufacture thin guitar strings or strings for high-pitch bowed-string instruments without any difficulty, and silver, for example, a fine-sounding but heavy working material, may be utilized as the wire for winding onto the core. Aramide filament yarn, manufactured by the Du Pont Company under the Trade Mark Kevlar 49 is available commercially and has the following properties :

Tensile strength (MPa)	2760
Highest tensile force (cN/tex)	190
Modulus (MPa)	120,000
Modulus (cN/tex)	8300
Elongation at failure (%)	1.9

Aramides are polyamides with aromatic nuclei which have at least 85% by weight bonded directly through amide groups to linear macromolecules and in which up to 50% of the amide bondings can be replaced by imide bondings.

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Poly-m-phenylene-isophthalic acid amide



Poly-p-phenylenediamine terephthalic acid

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The utilization of polyamides as core material for the manufacture of strings is already known. Despite this, the utilization of aramide fibres was not an obvious development, because one of their physical properties, namely their very good vibration-damping property, deterred the technical expert from utilizing them as core material for strings for musical instruments. This situation also explains the fact that the aramide material used in accordance with the present invention, although known since the beginning of the nineteen-sixties and obtainable under various trade names, did not make its entry into the manufacture of strings for musical instruments before the time of this present invention.

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The single illustration is a view of a string, with a core 1 consisting of aramide fibres 2 and a wound-on covering 3 consisting of wire, as it appears during the winding-on of the covering wire.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A string for musical instruments comprising a core consisting of a plurality of twisted aramide fibres and having a wound on wire covering therearound.
2. A string for musical instruments as claimed in claim 1 wherein said wire covering is silver.

DATED THIS 13TH DAY OF NOVEMBER 1990

DR. THOMASTIK UND MITARBEITER OFFENE HANDELSGESELLSCHAFT
By Its Patent Attorneys

GRIFFITH HACK & CO.
Fellows Institute of Patent
Attorneys of Australia



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