



(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
17.08.2005 Bulletin 2005/33

(51) Int Cl.7: **A47C 5/04, B21D 17/02**

(21) Application number: **04003424.1**

(22) Date of filing: **16.02.2004**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IT LI LU MC NL PT RO SE SI SK TR**
Designated Extension States:
AL LT LV MK

(72) Inventor: **Shieh, Chung-Li**
Changhua, Taiwan (TW)

(74) Representative: **Viering, Jentschura & Partner**
Steinsdorfstrasse 6
80538 München (DE)

(71) Applicant: **Shieh, Chung-Li**
Changhua, Taiwan (TW)

(54) **A furniture structure having a bamboo-like shape**

(57) A furniture structure having a bamboo-like shape primarily comprises a tensile-rod (2), a middle-die (3), an upper-die (4), a lower-die (5). A bamboo-like tube can be formed from a metal-tube (1), which is extruded and expanded at a suitable position via the separation and close-up of the upper-die (4) and the lower-die (1). For constructing the furniture structure having a bamboo-like shape as a structure with bulged-flanges

(12), as the hollow-hole (11) of the metal tube is protruded by the middle-die (3), after upper-die (4) and the lower-die (5) are closed-up, the tensile-rod (2) is moved toward the body of the middle-die (3) along the prop-ups (32) so that the metal-tube located at the molding portion (41) is extruded and expanded by the first bulging-flange (321) at the end of the prop-up (32), thus the finished metal-tube has a bulged-flange (12) at intervals of a suitable distance.

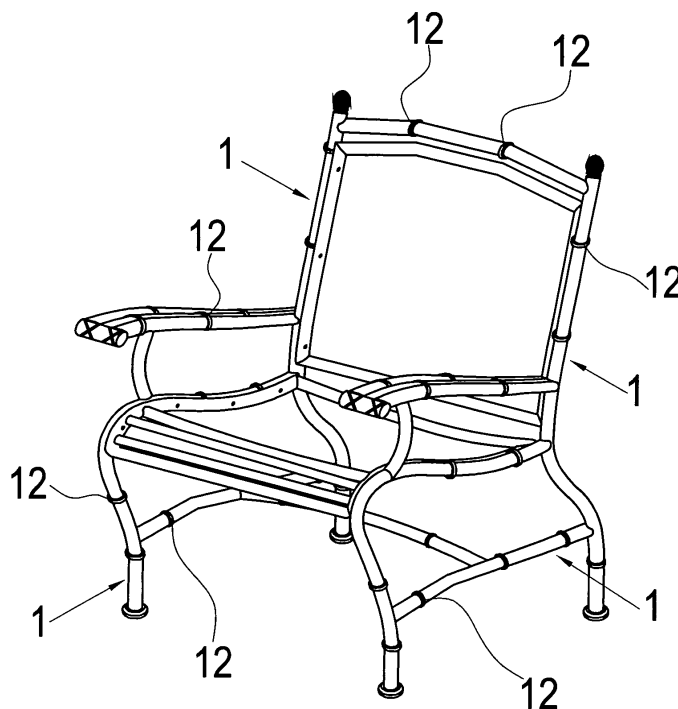


FIG. 1

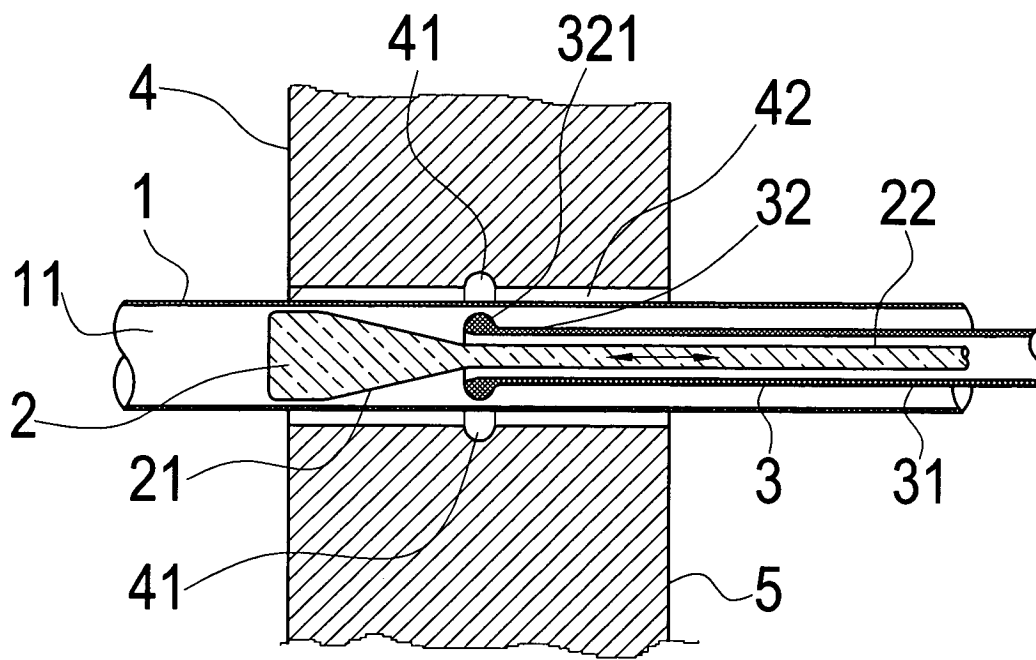


FIG. 3

Description

BACKGROUND OF THE INVENTION

1. Field of the invention

[0001] The present invention relates to a furniture structure having a bamboo-like shape, particularly to a furniture structure having a bamboo-like shape with bulged-flanges.

2. DESCRIPTION OF THE PRIOR ART

[0002] A conventional structure with a extruded bamboo-like shape, disclosed in patent announcement no. 267406 of R.O.C as a thereafter recited reference, has primary features of construction as following: two parallel rails installed on both sides on the top of a stand, a movement seat is installed on the rail, a lever is installed at the square end of the seat, a push seat is fixed on the top of the lever, and again a lower-die is installed on the movement seat, a guide-column is installed on both ends of the lower-die, a semi-circular molding groove is installed in the lower-die and an invaginated ring groove in the molding groove connected to an air port of the outside end of the lower-die, an matching upper-die is installed on the top of the lower-die, the upper-die is glide-sheathed on the guide-column and has a molding groove, a ring, an air port corresponding with the lower-die, and the top end of the upper-die is connected to the end of the push axis fixed on the push seat, a draw seat is installed on the bottom of the movement seat, and a end of the draw seat is connected to the push axis of a push cylinder, so that a slight bulged joint can be made from a tube material according with the molding speed of the movement seat. Such a construction has many faults, according to the recited reference, such as, too many components such as a lever, a push seat, a lower-die, an upper-die, and a draw seat, too complex operations for driving the draw seat and the movement seat, and easy damage.

[0003] Accordingly, it can be seen that the above-described conventional products still has many drawbacks, and are not designed well, and need to be improved urgently.

[0004] In view of disadvantages derived from the above-described conventional ways for extruding a bamboo-like structure, the present inventor had devoted to improve and innovate, and, after studying intensively for years, developed successfully a furniture structure having a bamboo-like shape according to the invention.

SUMMARY OF THE INVENTION

[0005] The object of the present invention is to provide a furniture structure having a bamboo-like shape with bulged-flanges, which can be formed from a metal-tube.

[0006] The further object of the present invention is to

provide a furniture structure, having a bamboo-like shape, after a metal-tube protrudes the prop-ups of the middle-die and places in the body of the middle-die, which can be rotated by manual operation, according with the requirement of a manufacturer, via the molding process of the bulged-flange structure of the present invention, and thus a bulged-flange structure with various features and pitches can be made by manual operation so that the overall structure of the furniture can more possess the bamboo feature.

[0007] The furniture structure having bamboo-like shape, capable of achieving the above-mentioned objects, comprises:

a metal-tube, a cylindrical object having a hollow-hole;
a tensile-rod having a guide-slant and an elongated bar;
a middle-die having a body and a plurality of prop-up, the body having a hole in the middle, a first bulging-flange formed at the end of the prop-up, a guide-rail formed between the prop-ups; the tensile-rod protrudes the middle-die through the hole;
an upper die and a lower die, symmetric each other, each having a parting surface, a molding portion, and a contour-shape;
the hollow-hole of the metal-tube is protruded by the middle-die, after upper-die and the lower-die put together, the tensile-rod is moved to the body of the middle-die along the prop-ups so that the metal-tube located at the molding portion is extruded and expanded by the first bulging-flange at the end of the prop-up to tightly close the first bulging-flange and the molding portion of the upper-die and the lower-die, thus the finished metal-tube has a bulged-flange at intervals of a suitable distance and the metal-tube between two bulged-flanges still can be maintained as an elongated tube.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The drawings disclose an illustrative embodiment of the present invention which serves to exemplify the various advantages and objects hereof, and are as follows:

Fig. 1 is the stereo schematic view of a furniture structure having a bamboo-like shape according to the present invention;

Fig. 2 is the stereo break down schematic diagram of the upper/middle/lower dies of a furniture structure having a bamboo-like shape according to the present invention;

Fig. 3 is the schematic diagram of a bamboo-tube furniture structure according to the present invention, wherein the upper-die and the lower-die are separated; and

Fig. 4 is the schematic diagram of a bamboo-tube

furniture structure according to the present invention, wherein the upper-die and the lower-die are closed-up.

[Representative symbols of main components]

[0009]

1	metal-tube
11	hollow-hole
12	bulged-flange
2	tensile-rod
21	guide-slant
22	elongated-bar
3	middle-die
31	body
32	prop-up
321	first bulging-flange
33	hole
34	guide-rail
4	upper-die
5	lower-die
41	molding-portion
42	contour-shape

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0010] Referring to Fig.2-4, the bamboo-tube furniture structure according to the present invention primarily comprises: a metal-tube1, a cylindrical object having a hollow-hole11; a tensile-rod2 having a guide-slant21 and an elongated bar22; a middle-die3 having a body31 and a plurality of prop-up32, the body31 having a hole33 in the middle, a first bulging-flange321 formed at the end of the prop-up, a guide-rail34 formed between the prop-ups32; the tensile-rod2 protrudes the middle-die3 through the hole33; an upper die4 and a lower die5, symmetric each other, each having a parting surface, a molding portion41, and a contour-shape42;

[0011] The hollow-hole 11 of the metal-tube 1 is protruded by the middle-die3, the upper-die4 and the lower-die5 can be closed-up or separated; while the upper-die4 and the lower-die5 separated, the metal-tube1 can be loaded on the contour-shape42 of the upper-die4 and the lower-die5, and subsequently while the upper-die4 and the lower-die5 closed-up, the tensile-rod2 is moved toward the body31 of the middle-die3 along the prop-ups32 so that the metal-tube1 located within the molding-portion41, extruded and expanded by the first bulging-flange321 at the end of the prop-up32, causes the

bulged-flange12 being fitted with the molding portion41 of the upper-die4 and the lower-die5; however, in the process of molding for expansion, the required external force for molding is provided from the end of the elongated bar22 of the tensile-rod2, connected to an air-pressure, a piston, or a punch(not shown), the prop-ups32 of the middle-die3 are spread by the guide-slant21 of the tensile-rod2, thus can force the first bulging-flange321 closing to the metal-tube1 and gradually draw the metal-tube1 toward the molding portion41 of the upper-die4 and the lower-die5.

[0012] The number of the prop-ups32 can be adjusted according to the processing requirement. That is, 2 prop-ups32, 3 prop-ups32, or a plurality of prop-ups32 can be applied to meet the processing requirement for spreading the prop-ups32 of the middle-die3 and to achieve the same tight-drawing effect.

[0013] After the metal-tube1 is constructed by the above-mentioned components, the hollow-hole11 of the metal-tube1 is placed in the middle-die3 of the present invention, then the upper-die4 and the lower-die5 is closed-up, then the tensile-rod2 is moved to the body31 of the middle-die3 along the prop-ups32, the prop-ups32 of the fixed middle-die3 is expanded outward further so that the metal-tube is expanded and molded as a bulged-flange12 at a suitable position. Since the guide-slant21 of the tensile-rod2 and the molding portion41 of the upper-die4 and the lower-die5 are collocated well, the prop-ups32 of the middle-die3 will not be damaged due to the first bulging-flange321 is spread outward excessively. Furthermore, the space between the first bulging-flange321 and the molding portion41 of the upper-die4 and the lower-die5 can be adjusted according with the movement distance of the guide-slant21 of the tensile-rod2, such that the metal-tube1 can be processed easily to form the bulged-flange12.

[0014] More, for taking out the finished metal-tube1, when the upper-die4 and the lower-die5 are separated, the metal-tube1 is moved backward to release the spreading outward status of the prop-ups32 of the middle-die3, so that the metal-tube1 can be taken from the upper-die4 and the lower-die5 easily. Thus, the finished metal-tube1 has a bulged-flange12 per a suitable distance and the metal-tube1 between the bulged-flanges12 still is an elongated tube.

[0015] Referring to Fig. 1, the metal-tube1 of the present invention can be processed or bent as a seat frame, a backrest frame, a leg, and an armrest of a chair structure, or a seat for supporting a human body during working or resting.

[0016] Many changes and modifications in the above described embodiment of the invention can, of course, be carried out without departing from the scope thereof. Accordingly, to promote the progress in science and the useful arts, the invention is disclosed and is intended to be limited only by the scope of the appended claims.

Claims

1. A furniture structure having a bamboo-like shape, comprising:

5

a metal-tube, a cylindrical object having a hollow-hole;

a tensile-rod having a guide-slant and an elongated bar;

a middle-die having a body and a plurality of prop-ups, the body having a hole in the middle, a first bulging-flange formed at the end of the prop-up, a guide-rail formed between the prop-ups; the tensile-rod protrudes the middle-die through the hole;

15

an upper die and a lower die, symmetric each other, each having a parting surface, a molding portion, and a contour-shape;

the hollow-hole of the metal-tube is protruded by the middle-die, after upper-die and the lower-die put together, the tensile-rod is moved to the body of the middle-die along the prop-ups so that the metal-tube located at the molding portion is extruded and expanded by the first bulging-flange at the end of the prop-up to tightly close the first bulging-flange and the molding portion of the upper-die and the lower-die, thus the finished metal-tube has a bulged-flange at intervals of a suitable distance and the metal-tube between two bulged-flanges still can be maintained as an elongated tube.

25

30

2. The furniture structure having a bamboo-like shape of claim 1, wherein the number of the prop-ups of the middle-die is 2 or more.

35

3. The furniture structure having a bamboo-like shape of claim 1, wherein the material of the metal-tube is aluminum.

40

45

50

55

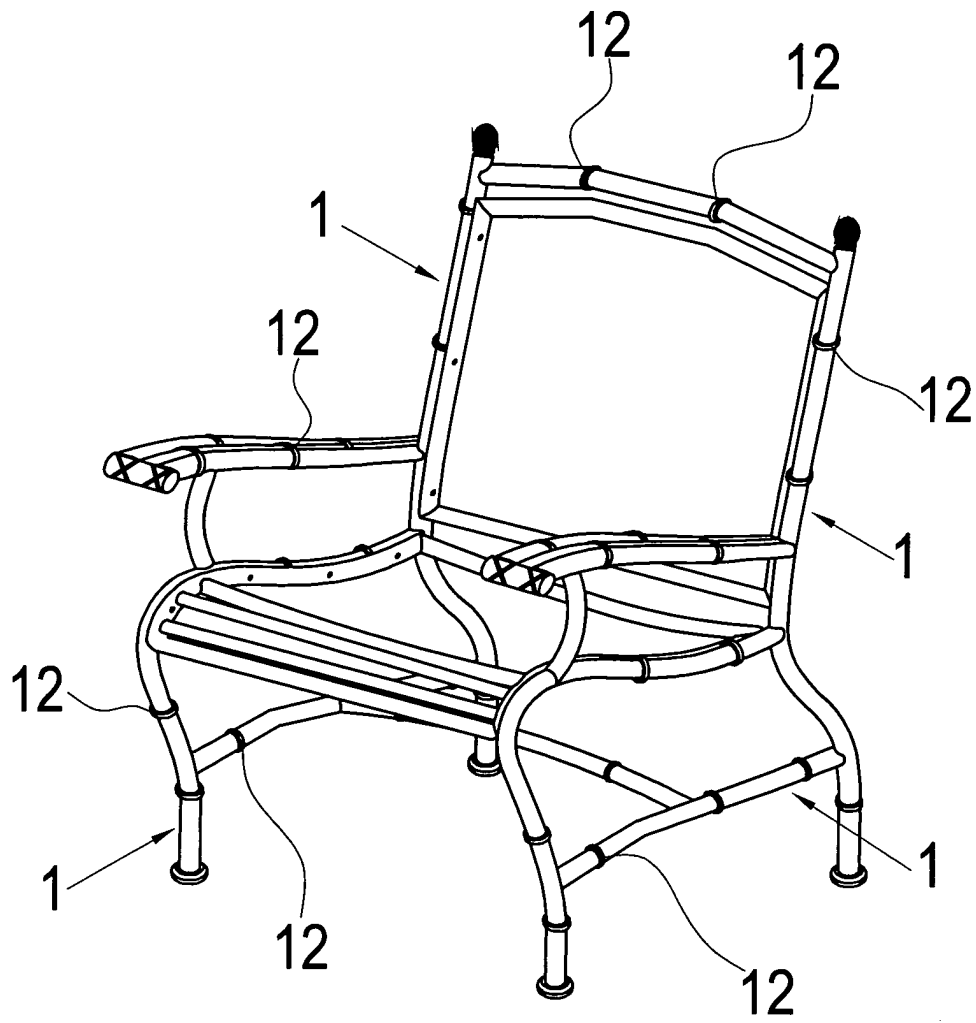


FIG. 1

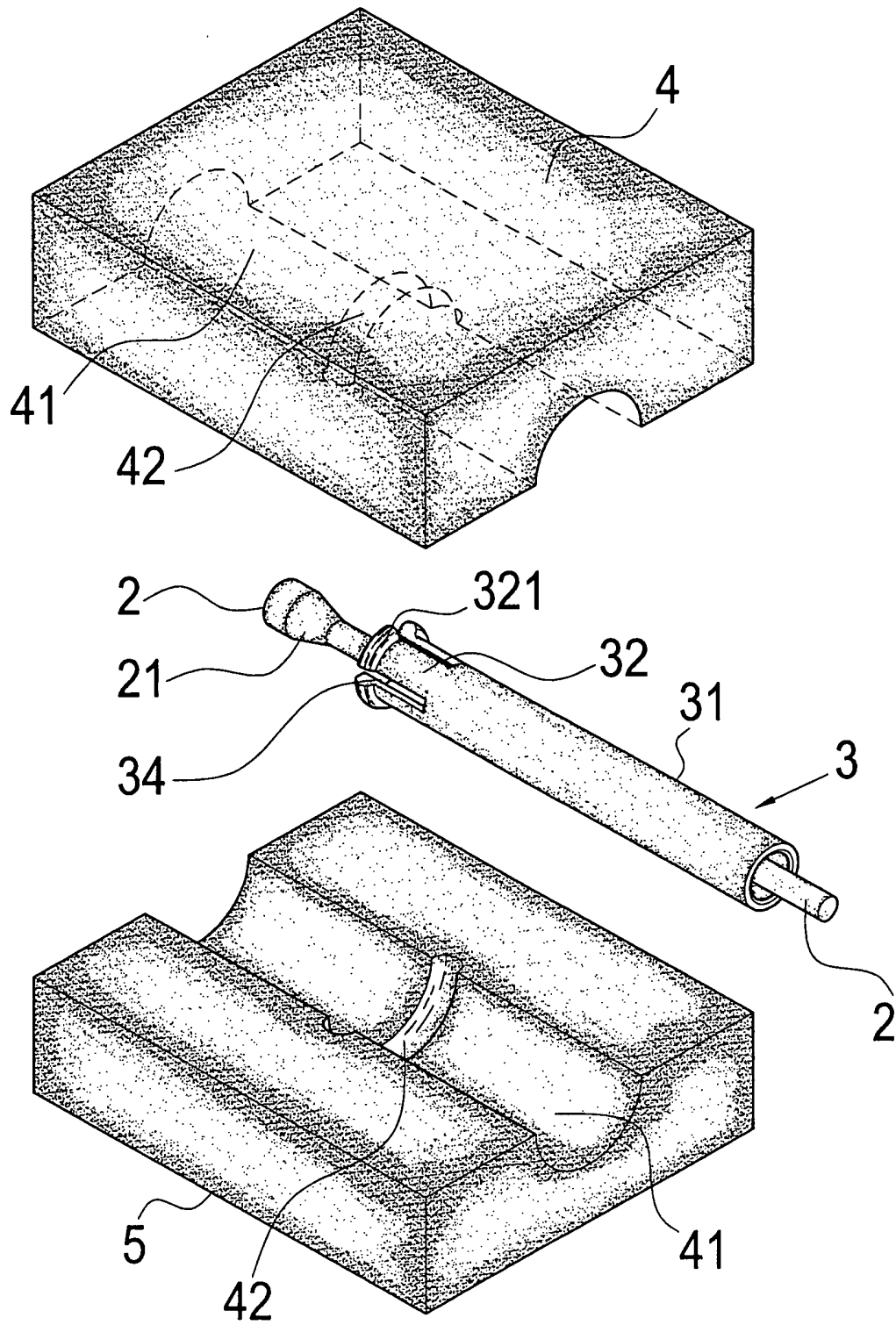


FIG. 2

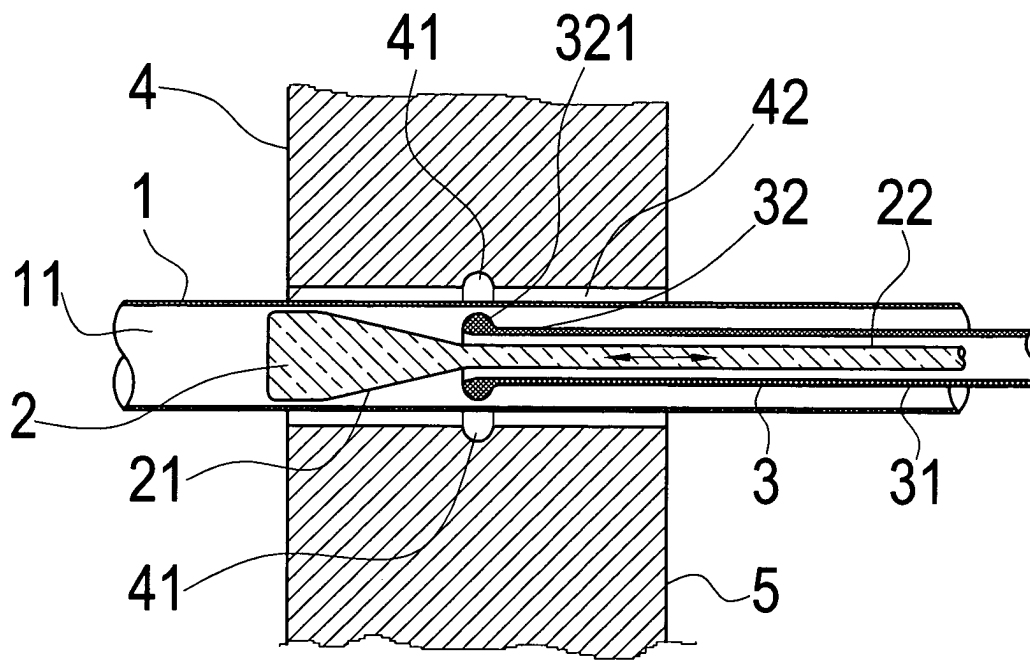


FIG. 3

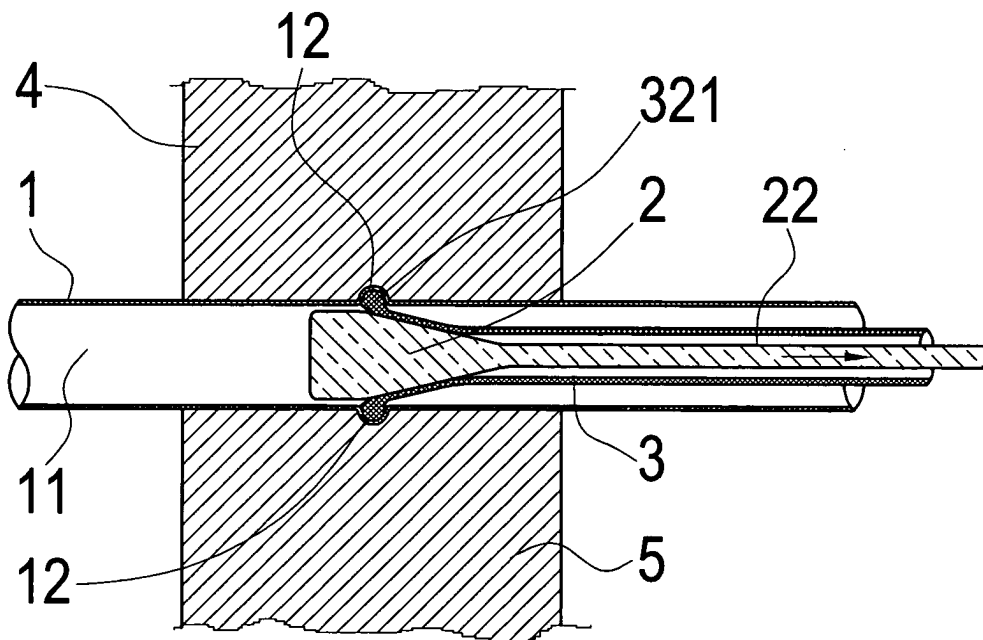


FIG. 4



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 00 3424

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	PATENT ABSTRACTS OF JAPAN vol. 014, no. 491 (M-1040), 25 October 1990 (1990-10-25) -& JP 02 200324 A (NIPPON KOKI KK), 8 August 1990 (1990-08-08) * abstract *	1,3	A47C5/04 B21D17/02
X	FR 1 097 856 A (PHILIPS NV) 12 July 1955 (1955-07-12) * the whole document *	1,2	
X	PATENT ABSTRACTS OF JAPAN vol. 010, no. 270 (M-517), 13 September 1986 (1986-09-13) -& JP 61 094744 A (SHINWA NICHIDOU KAGAKU KOGYO KK), 13 May 1986 (1986-05-13) * abstract *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			A47C B21D B25G B21C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 16 August 2004	Examiner Kus, S
CATEGORY OF CITED DOCUMENTS 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 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			

2
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 04 00 3424

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

16-08-2004

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
JP 02200324	A	08-08-1990	JP	2713452 B2	16-02-1998
FR 1097856	A	12-07-1955	NONE		
JP 61094744	A	13-05-1986	JP	1708049 C	11-11-1992
			JP	3074622 B	27-11-1991