

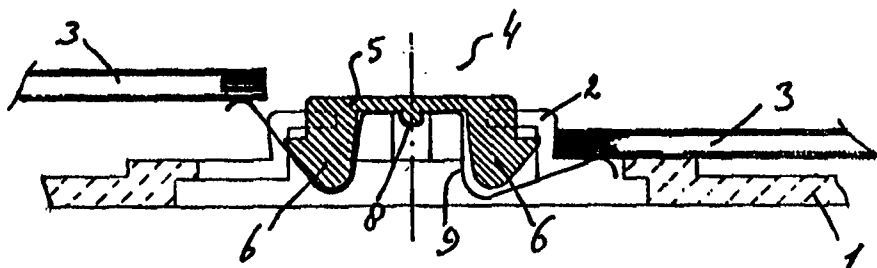


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(21) International Application Number: PCT/NL97/00515 (22) International Filing Date: 10 September 1997 (10.09.97) (30) Priority Data: 1004816 18 December 1996 (18.12.96) NL (71)(72) Applicant and Inventor: DAUTZENBERG, Joseph, Hubertus [NL/NL]; Banebergpassage 122, NL-6371 HW Landgraaf (NL).		(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>

(54) Title: DEVICE FOR REMOVING COMPACT DISKS FROM THEIR CONTAINERS**(57) Abstract**

Device for the removal of compact disks from the holder tray of the packing. The device has a push button which rests upon the mounting fingers of the holder tray. The device is provided with an eject spring which has two arms that reach between the mounting fingers. The push button is provided of spring supports which fit close to the spring when relaxed. The spring supports reach in between the mounting fingers of the holder tray. The eject spring is having the shape of a hexagonal with two arms and is manufactured from thin resilient metal.



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Device for removing compact disks from their containers.

The invention is a device for the removal of compact disks from the container. Compact disks are usually packaged in plastic boxes, containing a holder tray which keeps the disk immobile with resilient fingers in the central opening of the disk. To take the disk out it is necessary to depress the fingers and at the same time lift the disk out. This is a conflicting movement.

The invention makes it easy to remove the disk, in that by pressing the device a spring lifts the disk and the disk can easily be taken out.

The invention is special for those holding trays with twelve resilient mounting fingers.

For holding trays with eight resilient mounting fingers there is a device as is described in the Netherlands application NL-A-9201437.

This device is not fit to use in a holder tray with twelve mounting fingers because the space between the mounting fingers is limited and the releasing spring can get stuck underneath the mounting element.

The invention offers a better device which is reliable in lifting the compact disk when the device is pressed upon. To obtain this feature the device has supports for the spring which prevent deformation of the spring while mounting and rotating of the device is prevented.

The invention is described with reference to the drawings.

Fig. 1 shows the device, placed in the holding tray.

Fig. 2 shows section 2-2 with on one side the lifted disk and on the other side the fixed disk.

Fig. 3 shows section 3-3

Fig. 4 shows the underside of the device.

In Fig. 1 is indicated with (1) the holder tray with mounting fingers (2) holding the compact disk (3) immobile. The device (4) has a push button (5) which rests upon the mounting fingers (2). Push button (5) has a diameter which is smaller than the central opening in the compact disk. Attached to push button (5) are spring supports (6). These spring supports are perpendicular to push button (5) and reach out between the mounting fingers (2). The thickness of the material of the spring supports (6) is so that the spring supports (6) are easy fitting

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between mounting fingers (2). The spring supports have about the shape of a triangle with a rounded top. Attached to the push button (5) are hooks (7) to fix the device (4). Hooks (7) are gripping under mounting fingers (2).

05 The eject spring (9) is fastened to device (4) with extension (8) by deforming extension (8). Eject spring (9) has the shape of a hexagonal (10) with a hole (11) for fastening while from the hexagonal (10) extend two arms. Eject spring (9) when seen from the side has a "U" form of which the legs are bent-up about 135 degrees with a large
10 radius and towards the end bent down with a large radius. See Fig. 2. The shape of the spring support (6) is close fitting to eject spring (9) when it is relaxed. Eject spring (9) is manufactured from thin resilient metal.

In Fig. 2 is shown on the right side the situation where compact disk
15 (3) is retained by holding tray (1) and eject spring (9) pushes with resilience against compact disk (3). The resilience is sufficient to lift the disk but not enough to break the holding.

In Fig. 2 is shown on the left the situation after pushing down device (4) where compact disk (3) is lifted by eject.spring (9).

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Claims.

1. Device for the removal of compact disks (3) from holding tray (1), which is provided of twelve mounting fingers (2), having the shape of a push button of which the push button (5) having a diameter which is smaller than the opening in the compact disk (3) and rests upon the mounting fingers (2) and is provided with a eject spring (9) characterised in that the push button (5) is provided with hooks (7) and provided with two spring supports (6) with the shape of about a triangle with rounded top which fit close to the eject spring (9) in relaxed state and reach between the mounting fingers (2).
2. Device for the removal of compact disks as claimed in claim 1, characterised in that the eject spring (9) has mainly the shape of a hexagonal (10) with two arms which extends diameter and bent in "U"-form and having bent back for about 135 degrees with a large radius and next bent down on the ends while manufactured from thin resilient metal.
3. Device for the removal of compact disks as claimed in claim 1 and 2, characterised in that the eject spring (9) having an opening (11) through which extension (8) reaches and by deforming of extension (8) is connected to push button (5).
4. Device for the removal of compact disks as claimed in claim 1, 2 and 3, characterised in that the device (4) is provided with an eject spring (9) with four arms and with four spring supports (6).

FIG 1^{1/1}

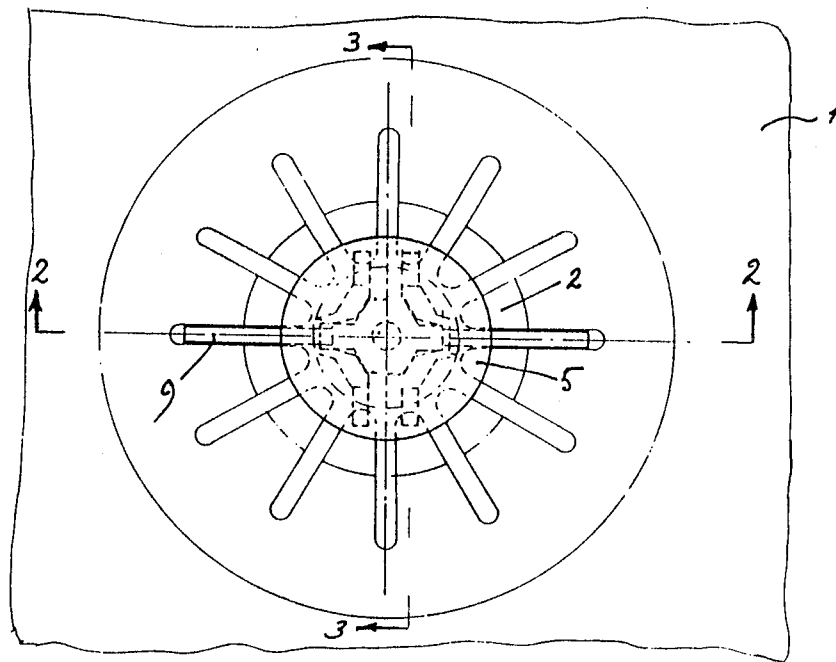


FIG 2

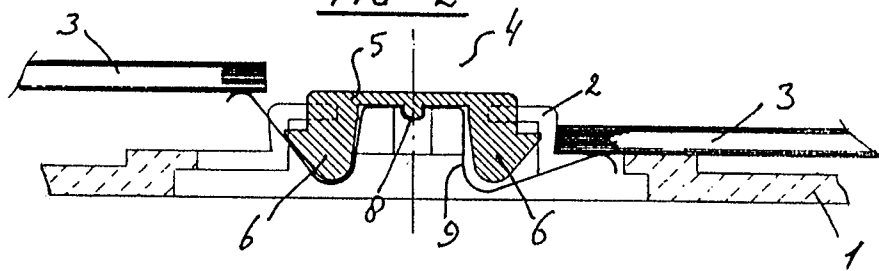


FIG 3

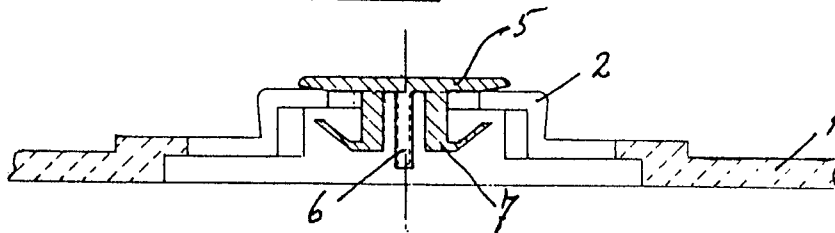
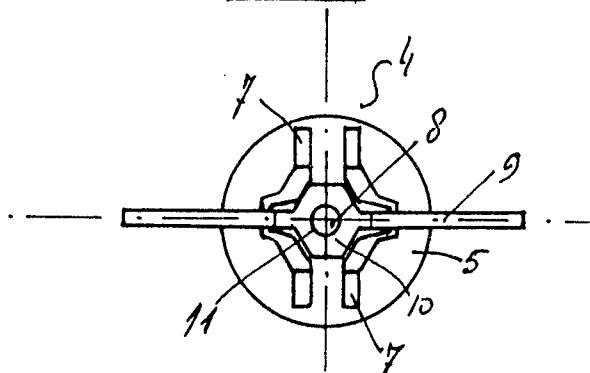


FIG 4



INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 97/00515

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 G11B33/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

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IPC 6 G11B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 94 05010 A (DAUTZENBERG JOSEPH HUBERTUS) 3 March 1994	1
A	see the whole document	2-4
X	US 5 251 750 A (GELARDI PAUL J ET AL) 12 October 1993	1
A	see column 5, line 20 - line 59; figures 5,6	2-4
X	EP 0 429 195 A (WYATT PETER GRAHAM) 29 May 1991	1
	see column 2, line 44 - column 3, line 49; figures 1-3	
X	WO 93 01598 A (KAMINSKI ANDREW ANDRZEJ) 21 January 1993	1
	see page 1, line 22 - page 3, line 15	
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A	EP 0 356 539 A (SHINETSU POLYMER CO) 7 March 1990 see column 5, line 37 - column 6, line 45 ---	1-4
A	DE 37 15 187 A (HAGER MANFRED) 24 November 1988 see the whole document ---	1-4
A	WO 96 14636 A (DUBOIS PLC ; PIJANOWSKI STEFAN ALEXANDER (GB); FRASER ANTHONY HENRY) 17 May 1996 see page 8, paragraph 2 - page 9, paragraph 2; figures 6-8 ---	1-4
A	US 5 400 902 A (KAMINSKI ANDREW) 28 March 1995 see column 8, line 2 - column 10, line 35 -----	1-4

INTERNATIONAL SEARCH REPORT

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International Application No

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