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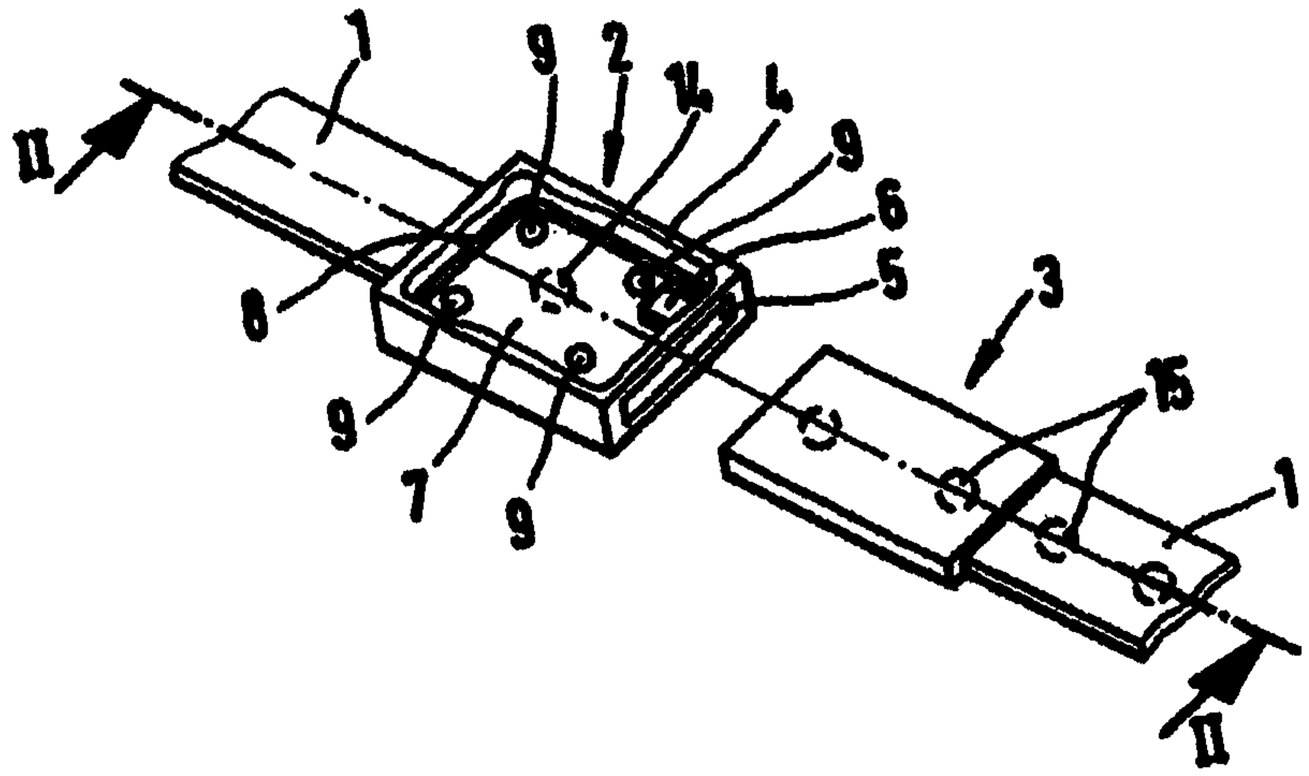
(12) (19) (CA) **Demande-Application**

(21) (A1) **2,320,186**
(86) 1999/06/14
(87) 2000/02/03

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(51) Int.Cl.[7] G07C 9/00
(30) 1998/07/21 (198 32 671.8) DE

(54) **SUPPORT DE DONNEES FONCTIONNANT SANS CONTACT**
(54) **CONTACTLESS DATA CARRIER**



(57) L'invention concerne un support de données permettant le contrôle sans contact de personnes munies d'un titre non cessible pour prétendre à une prestation. Ce support de données est intégré dans un bracelet (1) de telle manière qu'il est inutilisable après l'ouverture dudit bracelet (1).

(57) The invention relates to a data carrier for contactless control of persons having non-transferable authorization for using a service. A bracelet (1) is integrated into said carrier in such a way that it is rendered useless once the bracelet (1) has been opened.

PCT

WELTORGANISATION FÜR GEISTIGES EIGENTUM
Internationales Büro

INTERNATIONALE ANMELDUNG VERÖFFENTLICHT NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS (PCT)

(51) Internationale Patentklassifikation [7] **:**
G07C 9/00

A1

(11) Internationale Veröffentlichungsnummer: **WO 00/05686**

(43) Internationales Veröffentlichungsdatum: 3. Februar 2000 (03.02.00)

(21) Internationales Aktenzeichen: PCT/EP99/04084

(22) Internationales Anmeldedatum: 14. Juni 1999 (14.06.99)

(30) Prioritätsdaten:
198 32 671.8 21. Juli 1998 (21.07.98) DE

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(81) Bestimmungsstaaten: CA, JP, US, europäisches Patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Veröffentlicht
Mit internationalem Recherchenbericht.
Mit geänderten Ansprüchen.

(54) Title: CONTACTLESS DATA CARRIER

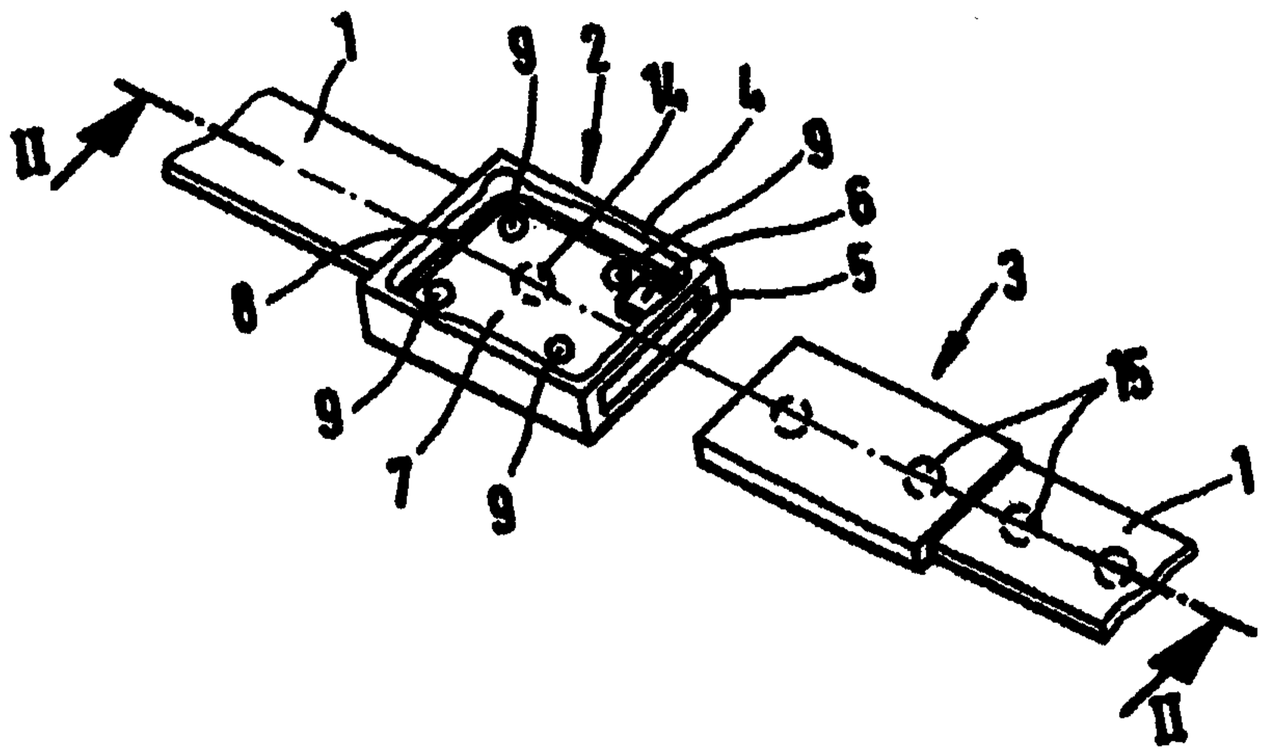
(54) Bezeichnung: BERÜHRUNGSLOS ARBEITENDER DATENTRÄGER

(57) Abstract

The invention relates to a data carrier for contactless control of persons having non–transferable authorization for using a service. A bracelet (1) is integrated into said carrier in such a way that it is rendered useless once the bracelet (1) has been opened.

(57) Zusammenfassung

Ein Datenträger zur berührungslosen Kontrolle von Personen mit einer nicht übertragbaren Berechtigung zur Inanspruchnahme einer Leistung, ist in ein Armband (1) derart integriert, dass er nach Öffnen des Armbandes (1) unbrauchbar ist.



P 70893-55

Noncontacting data carrier

This invention relates to a data carrier for noncontacting control of persons with nontransferable entitlement to utilize a service.

Compared to data carriers which must be inserted into a control device, noncontacting data carriers interacting with a write-read unit in the radio wave range over a relatively large data transmission distance have the advantage of being used hands-free while being fastened to the clothing in the form of a card for example or integrated into a wrist watch. They are therefore preferably used for example with the admission control devices of ski lifts and cable cars generally having a person singling device such as a turnstile which is actuated by the write-read unit or unblocked for a person when the write-read unit receives corresponding data from the data carrier.

In order to prevent nontransferable data carriers from being passed on to other persons one can provide them with a photo of the user. However, elaborate photos only pay off for more expensive data carriers with a longer period of validity, for example weekly ski passes in a winter sport area. Data carriers for lower-value services, e.g. day ski passes, are thus still improperly passed on to other persons. This results in considerable damage for lift and cable car operators.

DE 84 28 610 U1 discloses a bracelet for persons under supervision, such as patients in mental institutions, which can only be opened with a special tool. That is, the data carrier is not destroyed when the bracelet is removed. The bracelet has an integrated magnetic stripe which triggers a signal when the patient passes an electronic barrier at the exit of the institution.

The problem of the invention is to provide a relatively simply constructed noncontacting data carrier with nontransferable personal entitlement, for example for a short dura-

tion, for utilizing one or more services, e.g. the passenger transportation facilities of a ski area, which cannot be improperly passed on to other persons.

This is obtained according to the invention by integrating the noncontacting data carrier into a bracelet such that said data carrier is permanently useless, i.e. destroyed, when the bracelet is opened. The data carrier, which interacts with the write-read unit of the admission control device in the RF range (10^4 - 3.10^9 Hz), thus becomes inoperative so that the person singling device remains unactuated or blocked. This reliably prevents the nontransferable data carrier from being improperly passed on to other persons.

The data carrier can be rendered useless in different ways. For example, the antenna and/or the microchip can be rendered useless, or the circuit board if there is one connecting the antenna with the microchip. The microchip must be rendered useless in particular if a microchip with an integrated antenna is used.

The antenna must be adjusted exactly to a certain operating frequency. Accordingly, the antenna geometry must not vary. According to the invention, the antenna is therefore preferably disposed in a rigid part of the bracelet, in particular in a part of the bracelet closure.

For the same reasons the antenna is connected with the chip by a line as short as possible, for example via a circuit board.

In the following the invention will be explained in more detail by way of example with reference to the drawing, in which:

Fig. 1 shows a perspective view of the two parts of the closure of a bracelet with a broken-away upper side of a closing part according to a first embodiment;

Fig. 2 shows a section along line II-II in Fig. 1;

Fig. 3 shows a plan view of the two parts of a closure of a bracelet according to another embodiment, likewise with a broken-away upper side of one closing part; and

Fig. 4 shows a section through yet another embodiment of the closure.

According to Figs. 1 and 2, only partly shown bracelet 1 has two closing parts 2, 3. One part 2 of the closure is formed by flat housing 4, and other part 3 by a tongue.

While bracelet 1 extends away from one end of housing 4, it has at its other end slot 5 into which tongue 3 is inserted when bracelet 1 is closed.

Beside cavity 11 for receiving inserted tongue 3, housing 4 contains microchip 6 bonded to circuit board 7 to which antenna coil 8 is connected at the same time. Chip 6 is disposed in recess 11 of circuit board 7. Antenna coil 8 can extend along the periphery of circuit board 7.

Circuit board 7 has depressions 9 which are engaged by barblike projections 10 formed on tongue 3 when tongue 3 has been inserted into housing 4. Instead, projections can be provided on circuit board 9 and depressions in tongue 3, or depressions in circuit board 9 and tongue 3 which are engaged by accordingly disposed projections in a direction opposite the inserting direction of tongue 3.

When tongue 3 is pulled out of housing 4 to open bracelet 1, this damages circuit board 7, antenna 8 and/or chip 6, rendering the data carrier inoperative.

The embodiment according to Fig. 3 differs from that according to Figs. 1 and 2 substantially only in that conductor loop 12 (shown by dashed lines) integrated into bracelet 1 extends along bracelet 1 from one part 2 to the other part of the closure, being connected to chip 6 via circuit board 7.

Conductor loop 12 can be connected e.g. via an output of chip 6 with the processor thereof. When conductor loop 12 is severed, chip 6 and thus the data carrier become inoperative.

In the embodiment according to Fig. 3 the data carrier is thus also protected from bracelet 1 being improperly severed outside closure 2, 3 and passed on to another person, and bracelet 1 possibly joined together at the severed place, e.g. with adhesive tape.

In order to fit bracelet 1 to the circumference of the particular person's wrist so that it cannot be slipped off the hand, it can further have a bracelet circumference fitting device which cannot be opened or only by force, for example an expansion mandrel, a rivet or in the manner of a cable tie.

Preferably, said bracelet circumference fitting device is designed so as to be opened only by rendering the data carrier permanently useless, i.e. destroying it.

For example, housing 4 and circuit board 7 can be provided with bore 14, and tongue 3 and/or the corresponding end of bracelet 1 with openings 15 disposed one behind the other, as shown by dashed lines in Fig. 1. By inserting tongue 3 or the end of bracelet 1 through slot 5 and optionally inserting it through a corresponding slot at the other end of the housing one makes opening 15, which corresponds to the particular wrist circumference, congruent with bore 14 in board 7 or housing 4, and by introducing a rivet (not shown) one undetachably connects housing 4 and board 7 with tongue 3 or the end of bracelet 1.

The rivet can be designed to be electroconductive, thereby closing a contact (not shown) necessary for the functioning of the data carrier, for example forming an interruption of antenna 8 or for example a contact between conductor loop 12 and an output of chip 6, as explained in connection with Fig. 3.

Instead one can e.g. use a rivet comprising two undetachably interconnectable parts which are inserted into housing 4 from one and the other side, thereby mutually locking undetachably. Also, it is possible for example to provide housing 4 with a corresponding bore only on one side into which a button is introduced to lock undetachably with receiving means connected with board 7.

According to the variant of the bracelet circumference fitting device shown in Fig. 4, one end of bracelet 1 is provided like a cable tie with sawtooth profile 16 which cooper-

ates with at least one projection locking into sawtooth profile 16, for example expansion mandrel 17, which is disposed on the side of circuit board 7 facing sawtooth profile 16 and spring-loaded toward sawtooth profile 16. Expansion mandrel 17 can be provided for example on board 18 which is connected e.g. by shape mating with circuit board 7. Instead of with circuit board 7, mandrel 17 or other projection can be connected with antenna 8, chip 6 and/or conductive path 12.

In order to render the data carrier permanently useless upon forcible opening of the bracelet, the bracelet can also have for example a rated breaking point in the area of conductive path 12.

Bracelet 1 with the inventive data carrier can thus be opened and removed by the person wearing bracelet 1, for example a skier, himself. However, upon removal of bracelet 1 the inventive data carrier becomes permanently useless.

Patent claims

1. A data carrier for noncontacting control of persons with nontransferable entitlement to utilize a service, characterized in that the data carrier is integrated into a bracelet (1) so as to be permanently useless after the bracelet (1) is opened.

2. A data carrier according to claim 1, characterized in that it has a microchip (6) and an antenna (8), and at least the antenna (8) is disposed in a rigid portion of the bracelet (1).

3. A data carrier according to claim 2, characterized in that the microchip (6) is connected to a circuit board (7) containing the antenna (8).

4. A data carrier according to claim 2 or 3, characterized in that the rigid portion of the bracelet (1) is formed by a part (2) of the bracelet closure.

5. A data carrier according to claims 3 and 4, characterized in that the circuit board (7) has at least one depression (9) and/or projection in one part (2) of the closure which cooperates in barblike fashion with at least one projection (10) or depression in the other part (3) of the closure when the two parts (2, 3) of the closure are joined.

6. A data carrier according to any of the above claims, characterized in that the chip (6) is connected with a conductive path (12) extending around the bracelet (1) and rendering the data carrier inoperative when damaged.

7. A data carrier according to any of the above claims, characterized in that an unopenable device for fitting the circumference of the bracelet (1) to the wrist circumference is provided.

8. An apparatus according to claim 7, characterized in that the bracelet circumference fitting device is formed so as to be opened only by rendering the data carrier permanently useless.

FIG. 1

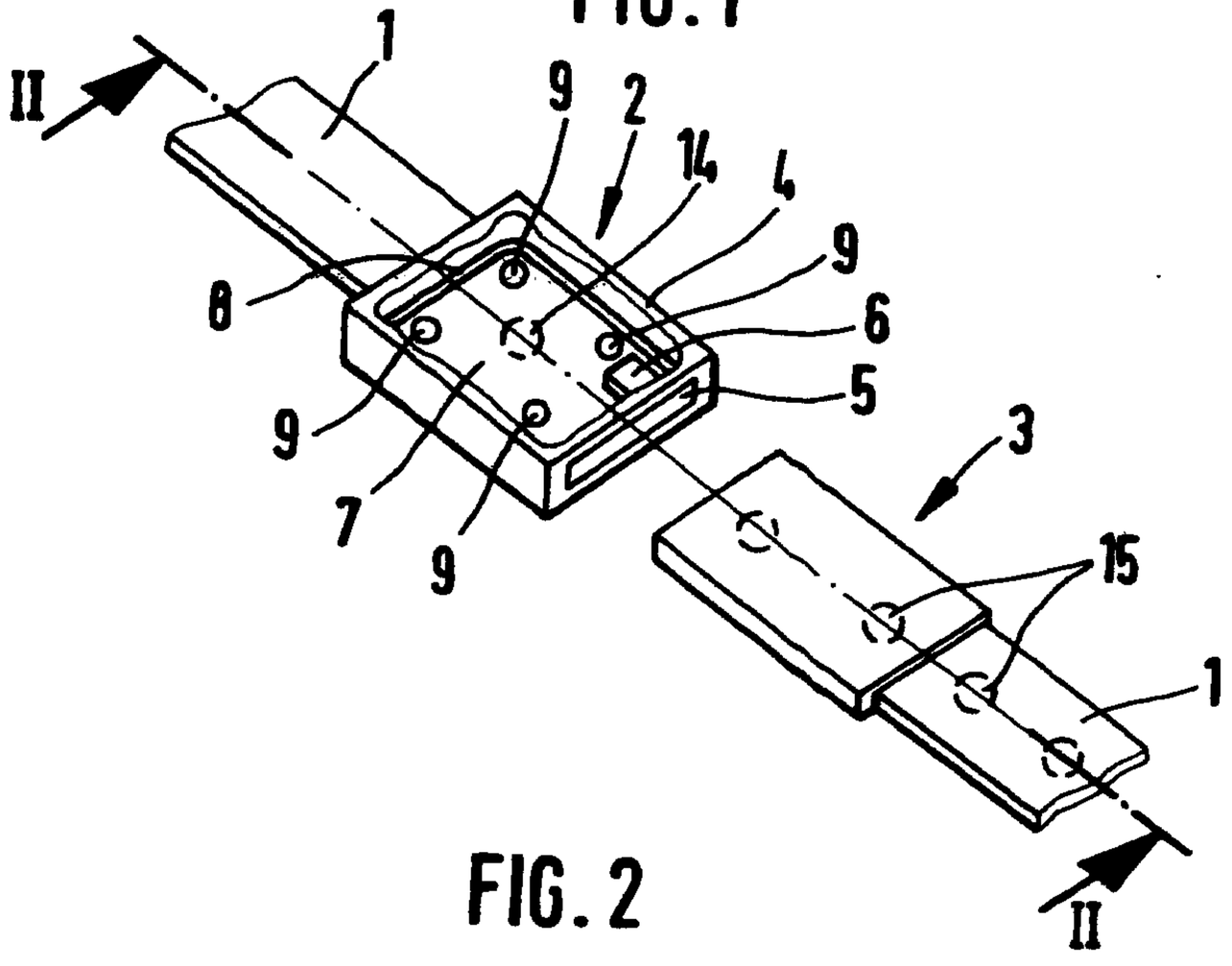


FIG. 2

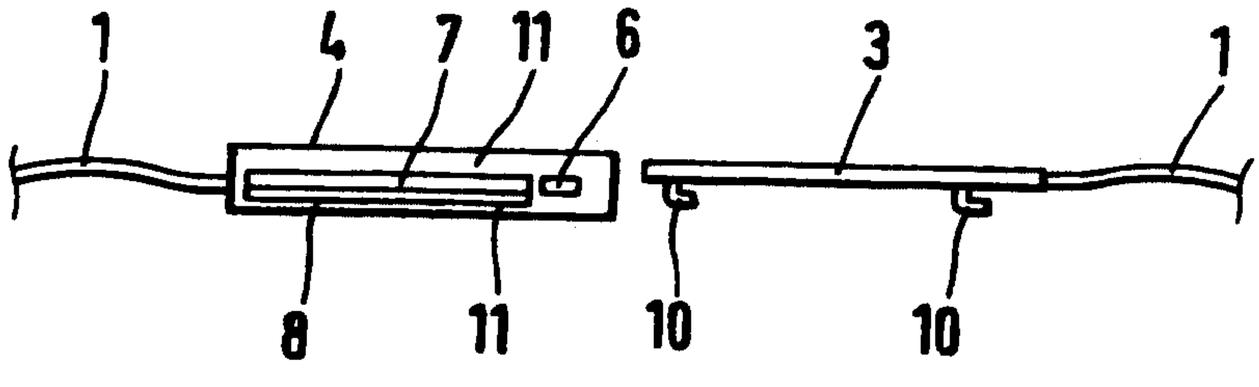


FIG. 3

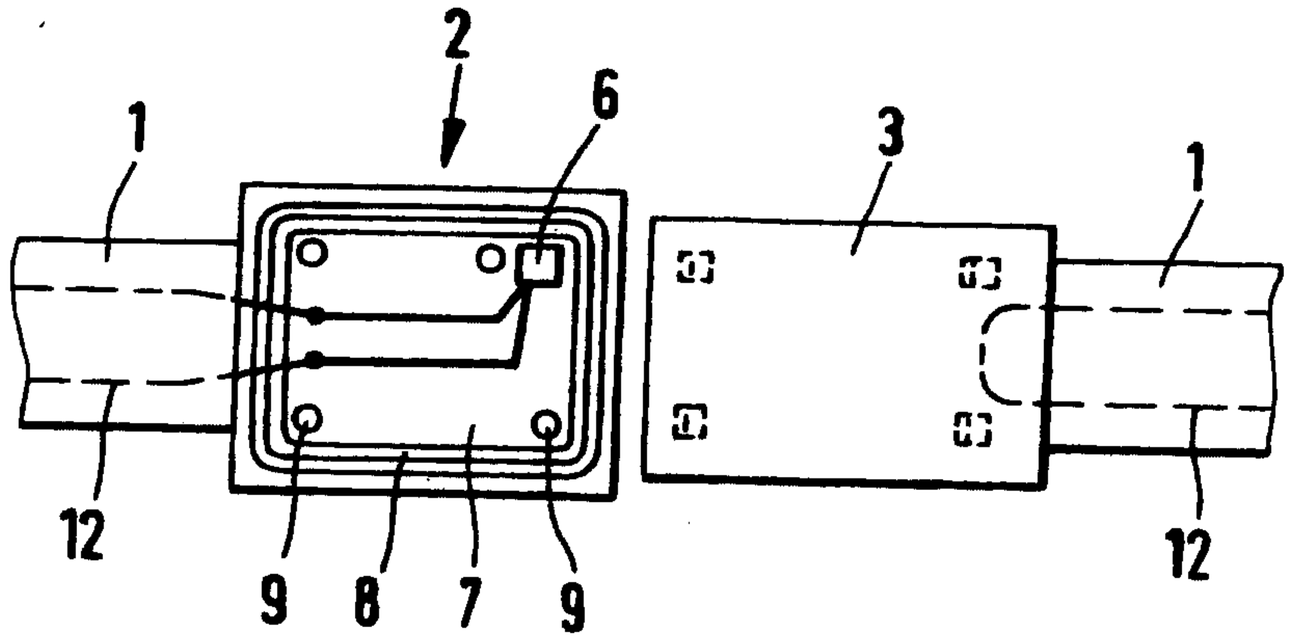
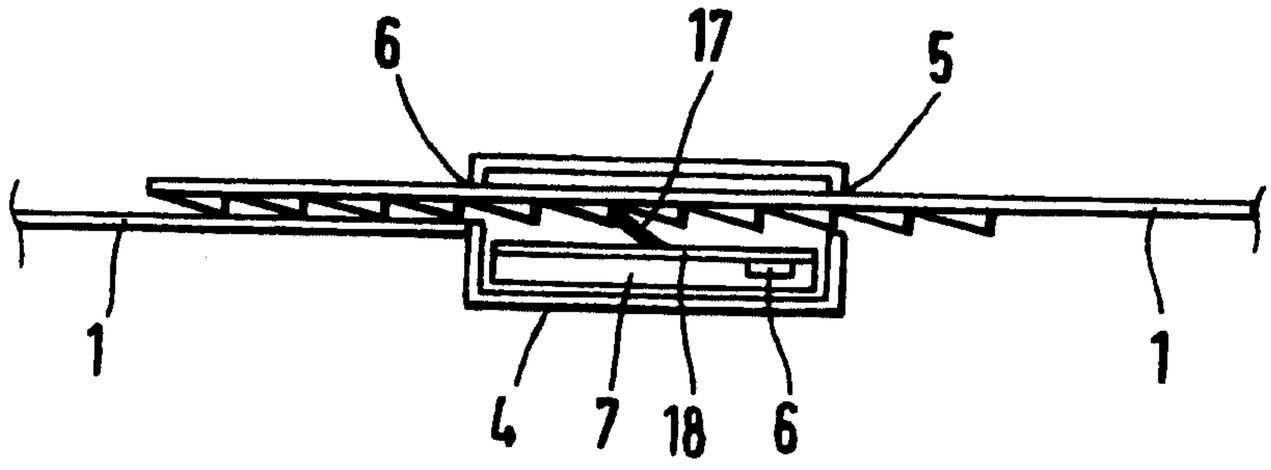
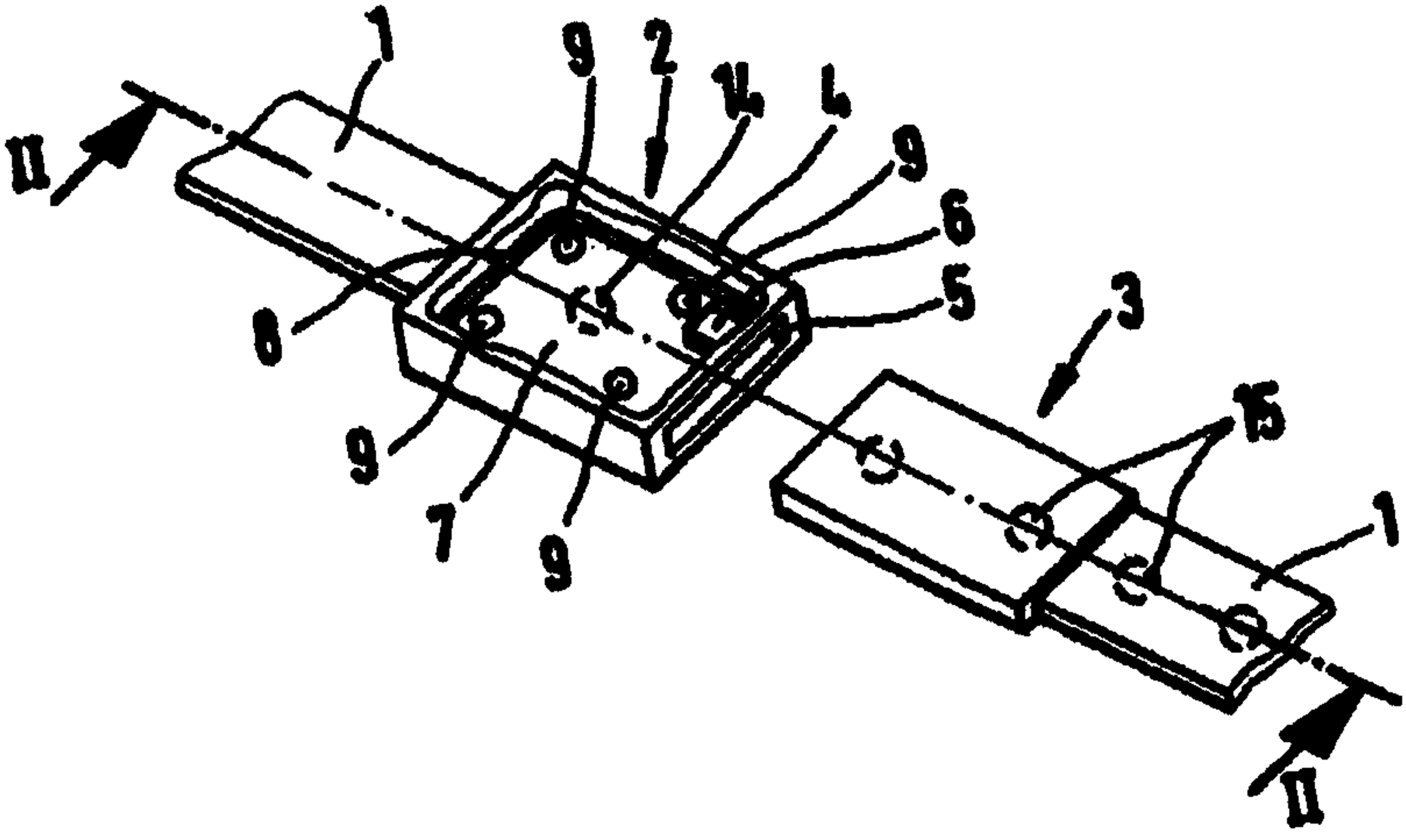


FIG. 4



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