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(54) **CATCH OF A HOOK LOCK**

(57) A catch of a hook bolt comprising the frontal strip with a catch opening for inserting the hook bolt, and a socket to slot the hook bolt in, and a securing element cooperating with the hook bolt characterised in that, the securing element is a slidable strip (5) with the hook opening (6) corresponding to the shape and dimensions of the trunk (8) of the hook bolt (7), slidably mounted on the frontal strip (3) and situated in the area of the catch opening (4) in the frontal strip (3).

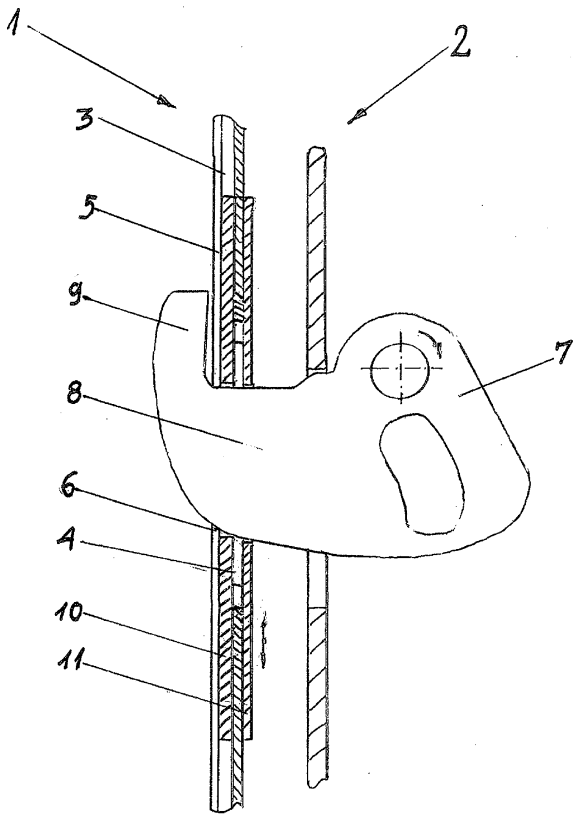


Fig 2

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## Description

**[0001]** The invention pertains to a catch of a hook bolt commonly used in doors and other closing components.

**[0002]** To secure a door leaf in a door frame, catches in the frame are commonly used along with various types of bolts interacting with them which are embedded in locks and latches.

**[0003]** The most effective in terms of anti-burglary protection seem to be locks with hook bolts. But they still have some shortcomings, which still have not been eliminated in practice.

**[0004]** The basic problem is the fact, that in real life conditions, it is practically not possible to make use of the entire working height of the hook as the anti-burglary hook bolt. Due to the need to maintain appropriate process tolerances and as a result of the inevitable deformation and drooping of the door leaf within its frame, in reality, approximately 50% of the working height of the hook is used. An additional problem is the fact that, for operational reasons, the height of the catch opening as compared to the total height of the hook bolt has to be relatively large, which in turn significantly reduces the functional level of the anti-burglary protection.

**[0005]** Among known solutions, as per patent GB2161532 A for instance, there is a catch with the sliding element, but its design has no anti-burglary qualities. The catch by the British patent is a part of the latch that is used for coupling the pin with a groove with the latching mechanism of the catch.

**[0006]** The catch design according to the Japanese utility model No. JPS542594U does not provide increased resistance to brake-in, either. A large clearance between the bottom surface of the hook opening and the trunk of the hook bolt, in the case of attempted brake-in with the use of special tools, allows to lift the sliding strip upwards and to withdraw the hook bolt disengaging it this way from the catch.

**[0007]** The purpose of the invention is to develop such a catch structure, which would provide a high degree of an anti-burglary resistance.

**[0008]** A catch of a hook bolt according to the invention, comprising the frontal strip with a catch opening for inserting the hook bolt, and a socket to slot the hook bolt in, and the securing element cooperating with the hook bolt characterised in that, the securing element is a slidable strip with the hook opening corresponding to the shape and dimensions of the trunk of the hook bolt, slidably mounted on the frontal strip and situated in the area of the catch opening in the frontal strip.

**[0009]** The slidable strip consists of an outer strip and the inner strip joined together by a fastener.

**[0010]** The hook opening in the slidable strip is formfit with the shape and dimensions of the base of the hook bolt.

**[0011]** The working hook of the hook bolt in the locked position completely overlaps the slidable strip.

**[0012]** The slidable strip falls to the starting position due to its own weight.

**[0013]** The fall of the slidable strip is supported by a push spring.

**[0014]** The slidable strip in the starting position overlaps, with its part over the hook opening, the upper part of the catch opening.

**[0015]** The the side walls of the hook opening in the slidable strip converge from top to bottom.

**[0016]** The catch according to the invention, as compared to existing solutions, ensures that the slidable strip in its locked position - i.e. when the working hook of the hook bolt completely overlaps the slidable strip- prevents withdrawing the hook bolt out of the socket in a manner other than the standard unlocking with a key or a handle. It is the case even if due to the use of the door, the door leaf has dropped in the frame within the permissible range.

**[0017]** An important advantage of the invention is the feature, that the hook opening in the slidable strip is matched in its shape and dimensions to the trunk of the hook bolt and consequently, in the locked position, in the case of attempted brake-in by means of special tools, lifting the strip upwards or shifting the hook downwards is blocked and, owing to this, disengaging the hook bolt from the catch in any way other than by turning the hook bolt around the axis of its rotation is not possible.

**[0018]** Functional tests have shown a significantly increased degree of the resistance to brake-in with tools and methods contained in the standards for RC2, RC3 classes and higher.

**[0019]** The slidable strip falls to its starting position due to its own weight. The fall of the slidable strip may be supported by a push spring.

**[0020]** A sample embodiment of the subject matter of the invention has been depicted schematically in drawings, wherein Fig. 1 shows the catch in the locked position in the perspective view and Fig. 2 - the cross-section of the catch in the locked position.

**[0021]** The catch of a hook bolt is situated in the door frame 1, and the hook bolt in the door leaf 2. The catch of a hook bolt contains the frontal strip 3 with the catch opening 4 and the slidable strip 5 with the hook opening 6. The hook bolt 7 consists of the trunk 8 and the working hook 9. The hook opening 6 has the shape and dimensions corresponding to the cross section of the trunk 8 of the hook bolt 7. Preferably, in the locked position the hook opening 6 fits closely to the trunk 8 of the hook bolt 7 and the height of the working hook 9 completely overlaps the slidable strip 5. With such elements matched, fixed and interacting with each other in the locked position, the slidable strip 5 prevents the withdrawal of the hook bolt 7 from the catch and at the same time, the hook bolt 7 blocks the movement of the slidable strip 5.

**[0022]** The slidable strip 5 in the starting position overlaps, with its part over the hook opening 6, the upper part of the catch opening 4.

**[0023]** In the sample embodiment the slidable strip 5 consists of the inner strip 10 and the outer strip 11 slidably

mounted on the frontal strip 3, and joined together by fasteners. Locking of the hook bolt 7 in the catch is achieved by rotating the hook bolt 7 to its end position and inserting the working hook 9 into the hook opening 6 in the slidable strip 5. In the locked position, the working hook 9 completely overlaps the slidable strip 5 which significantly increases the degree of resistance to brake-in.

**[0024]** After unlocking, the slidable strip 5 returns to its starting position.

**[0025]** The invention has been illustrated by the example of the catch of a hook bolt used in the multipoint door locks.

## Claims

1. A catch of a hook bolt comprising the frontal strip with a catch opening for inserting the hook bolt, and a socket to slot the hook bolt in, and a securing element cooperating with the hook bolt comprising the securing element which is a slidable strip (5) with the opening for hook (6) corresponding to the shape and dimensions of the trunk (8) of the hook bolt (7), slidably mounted on the frontal strip (3) and situated in the area of the catch opening (4) in the frontal strip (3).

2. The catch according to claim 1, **characterised in that**, the slidable strip (5) consists of an outer strip (11) and the inner strip (10) joined together by a fastener.

3. The catch according to claim 1, **characterised in that**, the opening for hook (6) in the slidable strip (5) is form-fit with the shape and dimensions of the trunk (8) of the hook bolt (7).

4. The catch according to claim 1, **characterised in that**, the working hook (9) of the hook bolt (7) in the locked position completely overlaps the slidable strip (5).

5. The catch according to claim 1, **characterised in that**, the slidable strip (5) falls to the starting position due to its own weight.

6. The catch according to claim 5, **characterised in that**, the fall of the slidable strip (5) is supported by a push spring.

7. The catch according to claim 1, **characterised in that**, the slidable strip (5) in the starting position overlaps with its part situated over the hook opening (6) the upper part of the catch opening (4).

8. The catch according to claim 1, **characterised in that**, the side walls of the hook opening (6) in the slidable strip (5) converge from top to bottom.

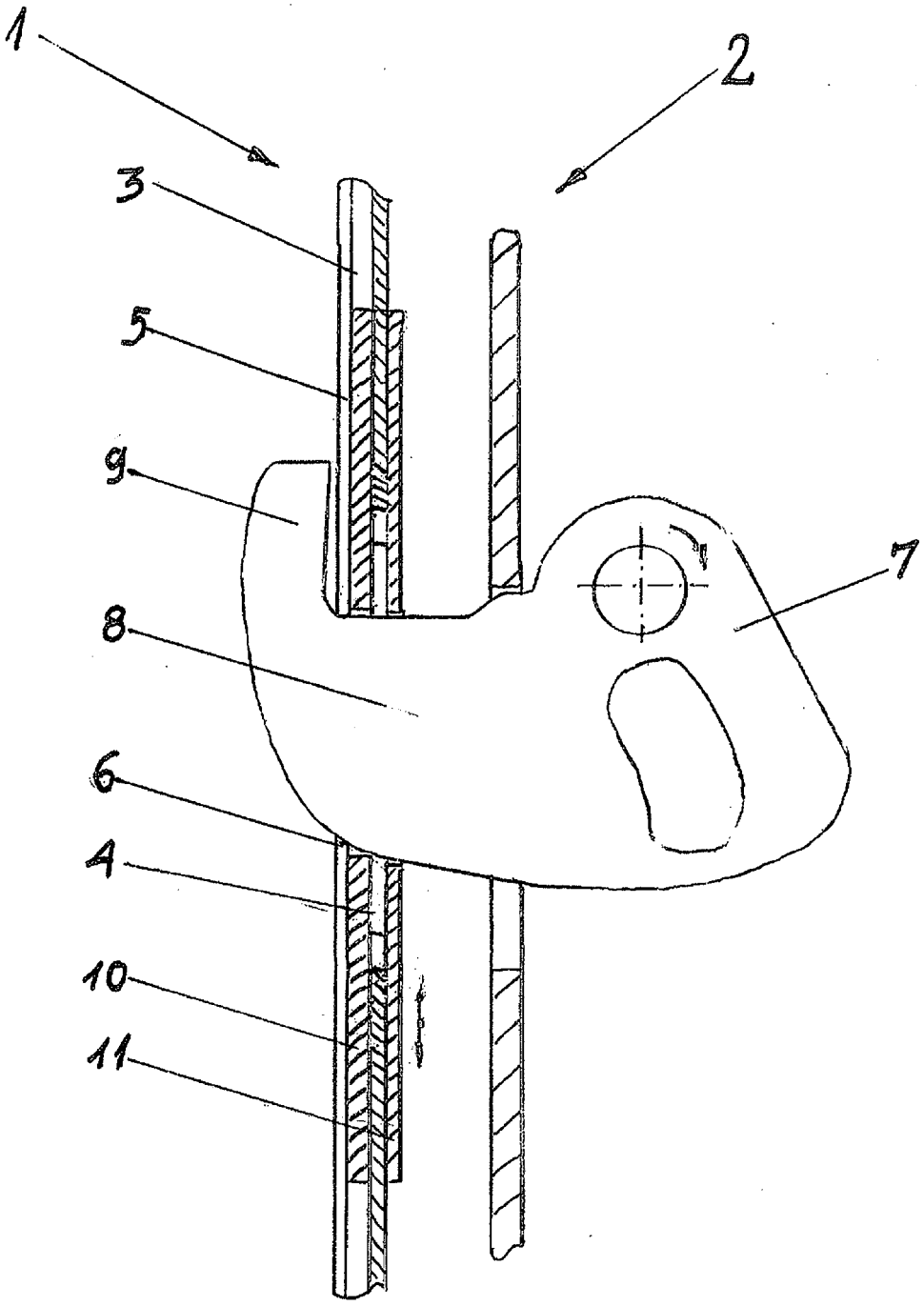


Fig2

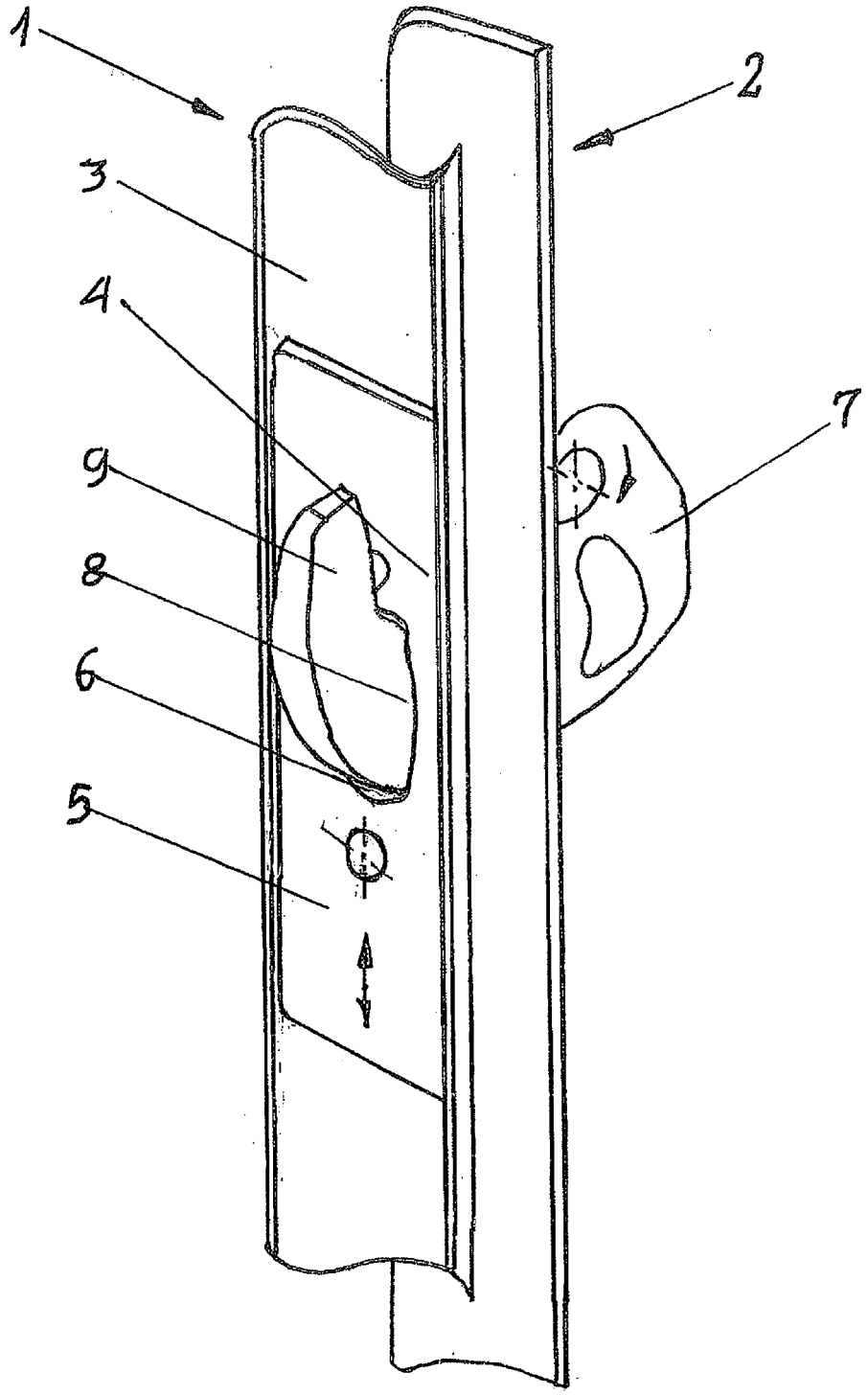


Fig. 1

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# EUROPEAN SEARCH REPORT

Application Number
EP 19 46 0011

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| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
|---|---|---|---|
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The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| The Hague | 12 August 2019 | Koster, Michael |

CATEGORY OF CITED DOCUMENTS

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## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 19 46 0011

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12-08-2019

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

## REFERENCES CITED IN THE DESCRIPTION

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