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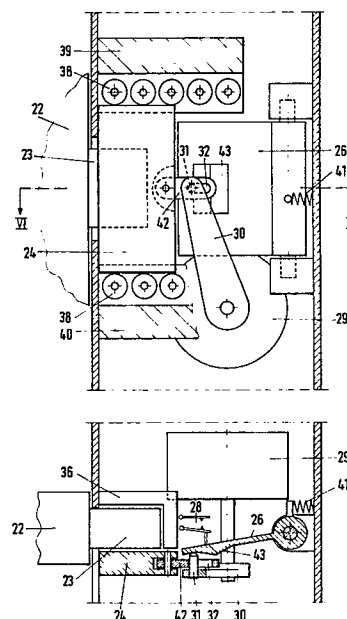
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⑤④ **Striking box for retaining the bolt of a door lock.**

⑤⑦ Striking box for retaining the bolt (23) of a door lock, comprising a bolt stop (24), an activating device (29) for moving the bolt stop (24), a signalling switch (28) and a mechanism (30, 31, 32, 42, 43) mounted between the activating device (29) and the bolt stop (24) which ensures that the movement of the bolt stop (24) is at first either prevented or delayed.

The path of the bolt stop (24) is crossed by a latch (26) which is not directly connected to the bolt stop (24). The activating device (29) and the latch (26) are coupled and one of the two operates in conjunction with the signalling switch (28).



- 1 -

Striking box for retaining the bolt of a door lock.

The invention relates to a striking box for retaining the bolt of a door lock, comprising a bolt stop, an activating device for moving the bolt stop, a signalling switch and a mechanism mounted between the
5 activating device and the bolt stop which ensures that the movement of the bolt stop is at first either prevented or delayed.

A striking box of this kind is known from Dutch Patent 152626.

In the known construction the mechanism comprises a toggle-joint lever and the signalling switch is operated by the bolt stop.

10 This makes it possible, when the bolt stop is retracted, to insert a piece of cardboard or a similar object in the striking box with the result that, in the position blocked by the toggle-switch lever, the latter cannot fully reach the rest position and the bolt stop is so close to its end position that the signalling switch is operated. The striking
15 box then appears to be closed, but the bolt stop can be pushed back. Besides abuse as indicated, accumulated dirt can also cause this condition.

The object of the invention is to eliminate this drawback, and this has been achieved by providing a latch which is not directly connected
20 to the bolt stop and which moves in a path crossing the path of the bolt stop, the activating device and the latch being coupled and one of the two operating in conjunction with the signalling switch.

The invention is not limited to a striking box in which the mechanism is formed by a toggle-switch lever. Nor does the bolt stop have to be movable backwards and forwards in a straight line in the same direction as the bolt when the door is being locked. In addition, the bolt stop does not have to be shaped like a cage, which limitation
5 applies to the patent mentioned above.

The activating device preferably comprises a rotary magnet having a crank coupling it to the bolt stop with space for motion. According to a suitable embodiment, the bolt stop is a lever hinging in a fixed
10 point.

The latch can be operated by an electro magnet which is electrically coupled to the activating device. In a different embodiment the latch has a run-on edge lying in the path of the crank and can be pushed away by the crank against the action of a spring.

15 The invention will be explained with the aid of the drawings annexed, wherein Fig. 1 shows a cross section of a striking box with a swivelling bolt stop in the closed and latched position;

20 Fig. 2 shows the same in the closed and unlatched position;

Fig. 3 shows the same in the open position;

Fig. 4 shows a transverse section along IV - IV in Fig. 1;

25 Fig. 5 shows a cross section of a striking box with a bolt stop movable along a straight line;

Fig. 6 shows a transverse section along VI - VI in Fig. 5;

Fig. 7 shows an embodiment without extra springs;

Fig. 8 and

30 Fig. 9 show two cross sections of the embodiment shown in Fig. 7 along the lines VIII - VIII and IX - IX respectively.

Figs. 1-4 show a striking box; in Figs. 1-3 a side plate has been

removed. To the right of front plate 1 is a closed door 2 with a door lock having a bolt 3. In the closed position of the striking box the bolt 3 is covered by a bolt stop formed by a lever 4 hinging on a spindle 5. Lever 4 has a pin 7 which can operate together with a swivelling latch 6. Latch 6 can operate a signalling switch 8. A rotary magnet 9, the crank of which is formed by a flywheel 10, constitutes the activating device operating lever 4 by means of a pin 11 on the flywheel engaging a hole 12 in lever 4 which hole leaves space for motion of the pin 11. Latch 6 is operated by flywheel 10 via a pivot 13 and a link 14.

In the position shown in Figs. 1 and 4, the bolt stop keeps bolt 3 locked in. The bolt stop is locked in its place because latch 6 is behind pin 7. Signalling switch 8 is open.

For opening the striking box, rotary magnet 9 is energized. Flywheel 10 starts turning counter-clockwise. This causes latch 6 to be lifted via pivot 13 and link 14, so that pin 7 is released and signalling switch 8 is closed. Meanwhile, pin 11 traverses hole 12 while lever 4 remains in its rest position. This situation is shown in Fig. 2. Subsequently, pin 11 pushes lever 4 to the left against the action of a draw spring 15, supported by the energy accumulated in flywheel 10. Now the situation shown in Fig. 3 has arisen, in which bolt 3 is unobstructed.

After door 2 has been opened the space containing the moving parts is not accessible, owing to the presence of a cover 16.

When the striking box is closed again, lever 4 follows pin 11 under the influence of spring 15. After the lever has arrived in its end position, link 14 moves latch 6 behind pin 7 and switch 8 is opened.

In Figs. 5 and 6 the reference numbers for parts corresponding or comparable with those in Figs. 1-4 have been obtained by increasing the numbers in Fig. 1 by 20.

Lever 4 in Fig. 1, which constitutes the bolt stop, has been replaced in Fig. 5 by a bolt stop 24 movable in a straight line, which

is guided by rollers 38 in blocks 39 and 40. In the position shown in Figs. 5 and 6 the striking box is closed; bolt stop 24 covers bolt 23 of door 22. Bolt stop 24 is blocked by a swivelling latch 26. This latch works together with a signalling switch 28. The latch is pressed
5 against a pin 31 by a compression spring 41. Pin 31 is fitted on a crank 30 of a rotary magnet 29. It engages a hole 32 in link 42 fitted to bolt stop 24, the hole leaving space for motion.

The operation of this embodiment is as follows.

For opening the striking box, rotary magnet 29 is energized, which
10 causes crank 30 to start turning clockwise. As a result, latch 26 is pushed upwards via pin 31 and run-on edge 43 on the latch, whereby switch 28 is closed while pin 31 traverses hole 32. Next, bolt stop 24 is moved to the right via link 42, the latch laying itself against bolt stop 24 with run-on edge 43, and the bolt stop moving underneath the
15 run-on edge. The bolt is now unobstructed.

After door 22 has been opened the space containing the moving parts is not accessible, owing to the presence of a cover 36.

Figs. 7, 8 and 9 show a third embodiment of the device according to the invention. This embodiment has no other springs than those in
20 the rotary magnet, which enhances the reliability and reduces the risk of abuse and damage.

Figs. 7 shows a bolt stop 45 in latched position. A latch 46 which pivots on a spindle 47 has to be turned away before the bolt stop can be moved. A flywheel 49 has been fitted on the spindle of a
25 rotary magnet 48 (not shown in the figure). The flywheel is provided with a pawl 50 and a pin 51. An arm 52 can swivel on the spindle of rotary magnet 48. Arm 52 has a hole 53 providing two stops for pin 51. At the end of arm 52 a recess 54 has been provided which can operate together with pawl 50. Pawl 50 can also work together with a stationery
30 roller 55. Flywheel 49 has a run-on slot 56. A pin 57 fitted to a segment 59, which swivels on a fixed pivot 58, works together with slot 56. Segment 59 operates latch 46 via a link 60. A signalling switch

61 has been mounted near the latch; the switch operates when latching and unlatching takes place.

This embodiment operates as follows.

5 When rotary magnet 48 is energized, segment 59 is turned clockwise by run-on slot 56 and pin 57 (Fig. 9). This causes latch 46 to be turned out of the path of bolt stop 45, so that signalling switch 61 is operated.

Meanwhile pawl 50 has been advanced between roller 55 and recess 54 and pin 51 has reached the other stop in hole 53. Arm 52 is now taken along and bolt 45 is moved.

10 When energization of the rotary magnet is discontinued, flywheel 49 returns to its normal position. This causes pawl 50 to move along roller 55, so that the pawl presses against the end of recess 54, taking along arm 52, which in turn takes bolt stop 45 back to its normal position. At the end of the movement of flywheel 49, segment
15 59 turns backwards, causing latch 46 to block bolt stop 45. Again, signalling switch 61 is operated.

Within the framework of the invention many embodiments are possible. For example, the latch might be coupled to the activating device electrically instead of mechanically.

20 Contrary to the embodiment according to the patent mentioned, the embodiments described can be used without any adaptation for doors opening clockwise and counter-clockwise when viewed from above.

Claims:

1. Striking box for retaining the bolt of a door lock, comprising a bolt stop, an activating device for moving the bolt stop, a signalling switch and a mechanism mounted between the activating device and the
5 bolt stop which ensures that the movement of the bolt stop is at first either prevented or delayed, characterized by a latch (6, 26, 46) which is not directly connected to the bolt stop (4, 24, 45) and moves in a path crossing the path of the bolt stop, the activating device and the latch being coupled and one of the two operating in conjunction
10 with the signalling switch (8, 28, 61).
2. Striking box according to claim 1 characterized in that the activating device comprises a rotary magnet (9, 29, 48) coupled to the bolt stop (4, 24, 45) with space for motion.
3. Striking box according to claim 2 characterized in that a flywheel
15 (10, 49) is connected to the activating device.
4. Striking box according to claim 2 characterized in that the bolt stop is formed by a lever (4) hinging in a fixed point.
5. Striking box according to claim 1 characterized in that the latch is provided with an electromagnetic drive mechanism coupled
20 to the activating device.
6. Striking box according to claim 1 characterized in that the latch (26) has a run-on edge (43) which lies in the path of the crank (30) and can be pushed away by the crank against the action of a spring.

7. Striking box according to claim 3 characterized in that a pawl (50) has been provided on the flywheel (49), which pawl has been fitted on the arm (52) between a stationary roller (55) and a recess (54), in such a way that when the rotary magnet (48) is energized, pawl (50) is advanced between the roller (55) and the still unturned arm (52), and that when the energization of the magnet is discontinued the pawl moves along the roller, and in doing so engages the end of the recess (54) on the arm which has meanwhile been turned and returns the arm to its normal position.
- 10 8. Striking box according to claim 7 characterized in that the flywheel (10, 49) operates in conjunction with a mechanism (14, 59) which is coupled to the latch (46) in order to move the latch at the beginning of the energization and at the end of the return stroke.

FIG. 1

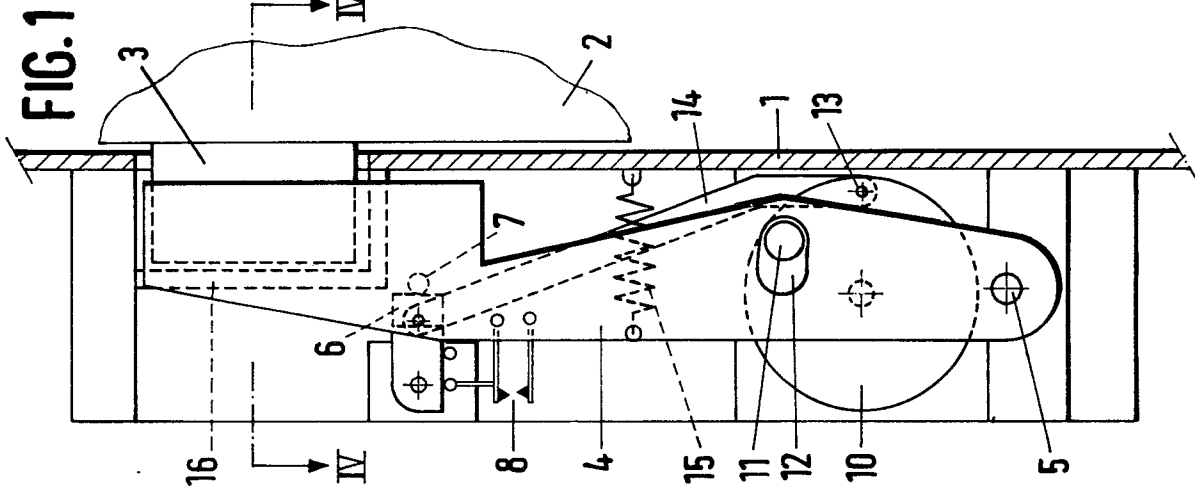


FIG. 2

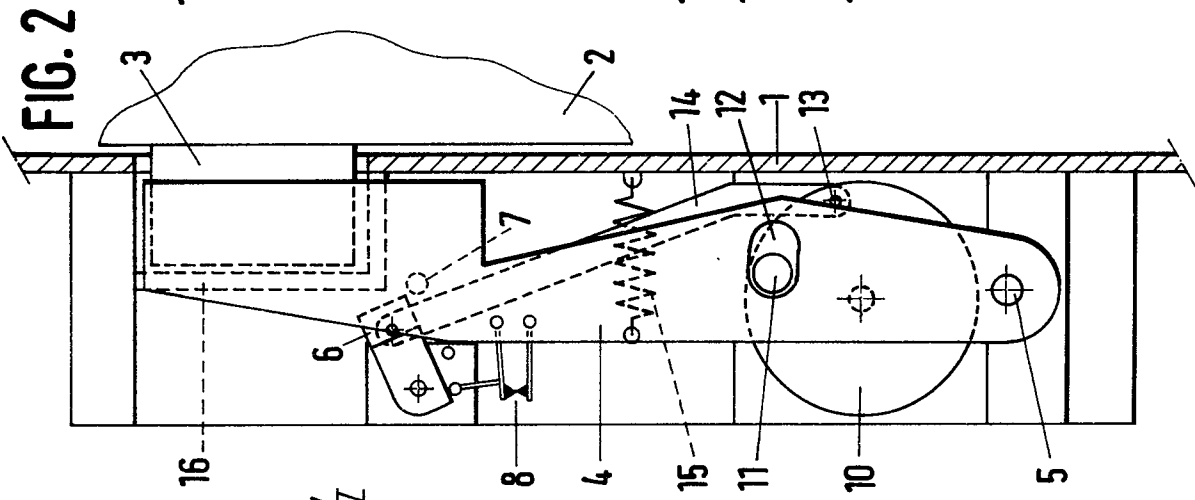


FIG. 3

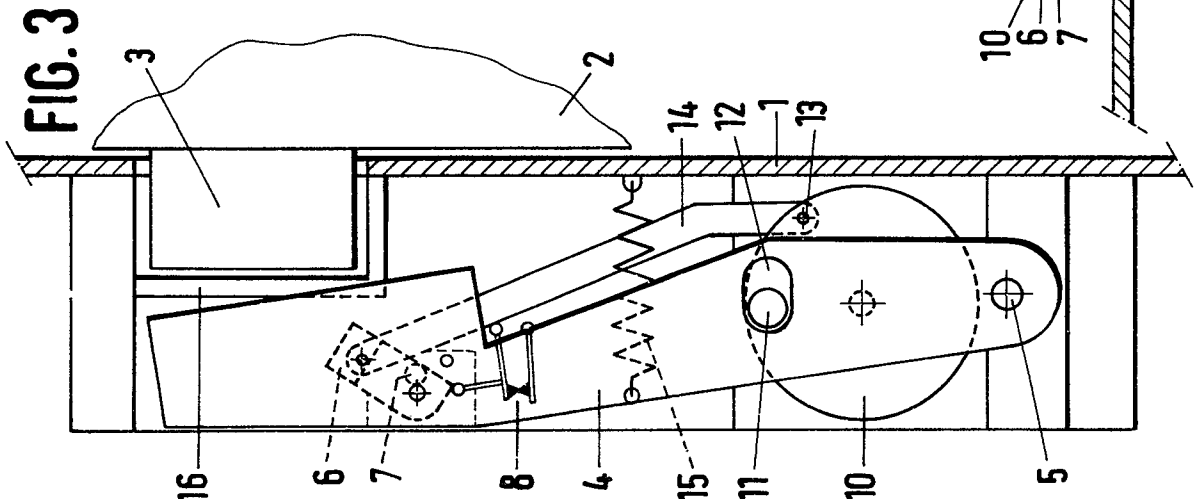


FIG. 4

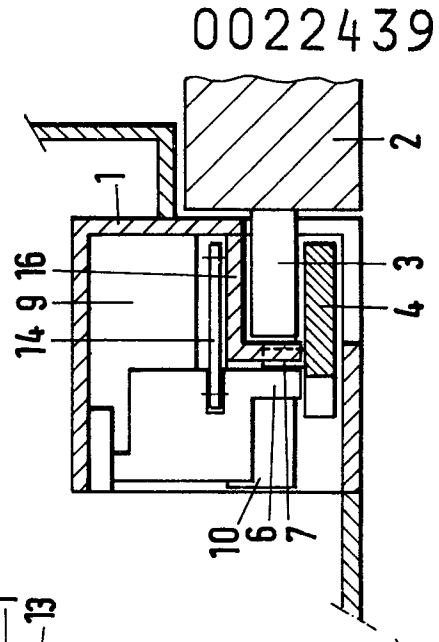


FIG. 5

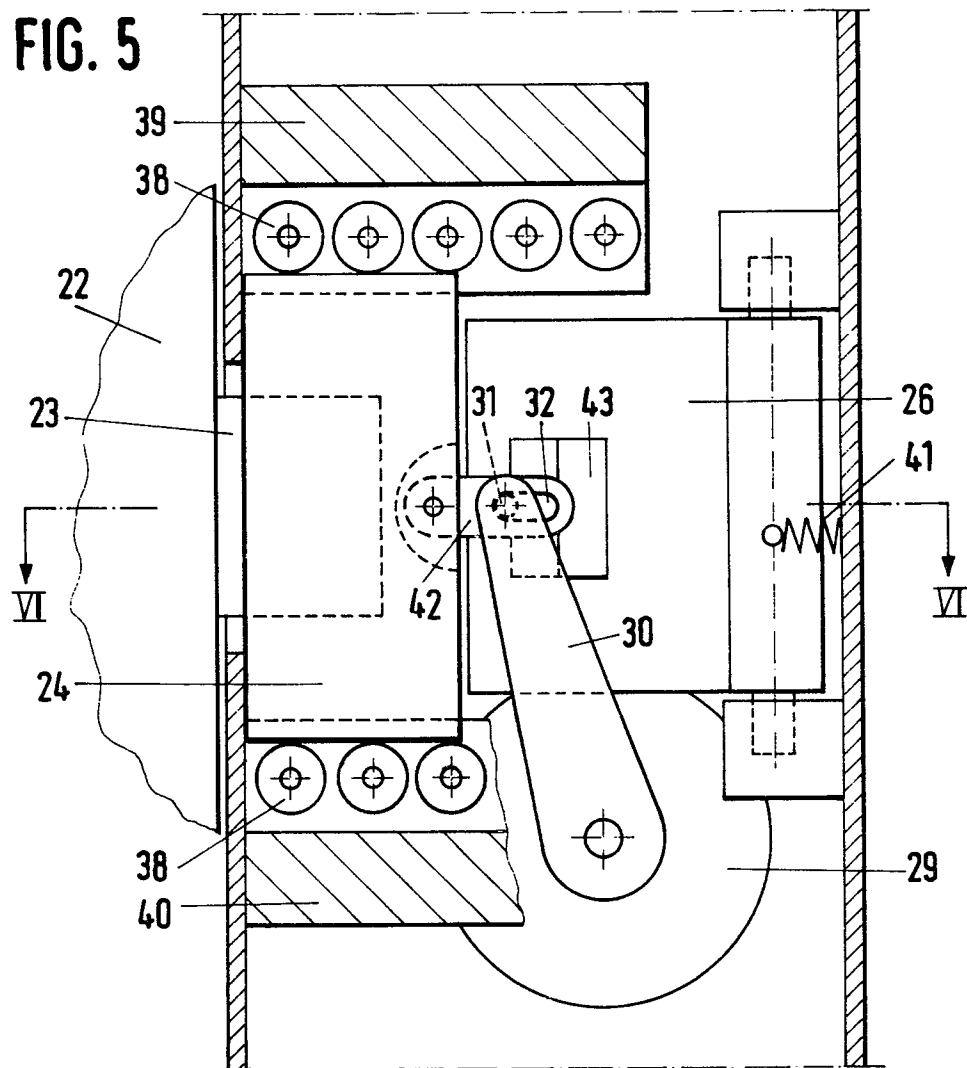


FIG. 6

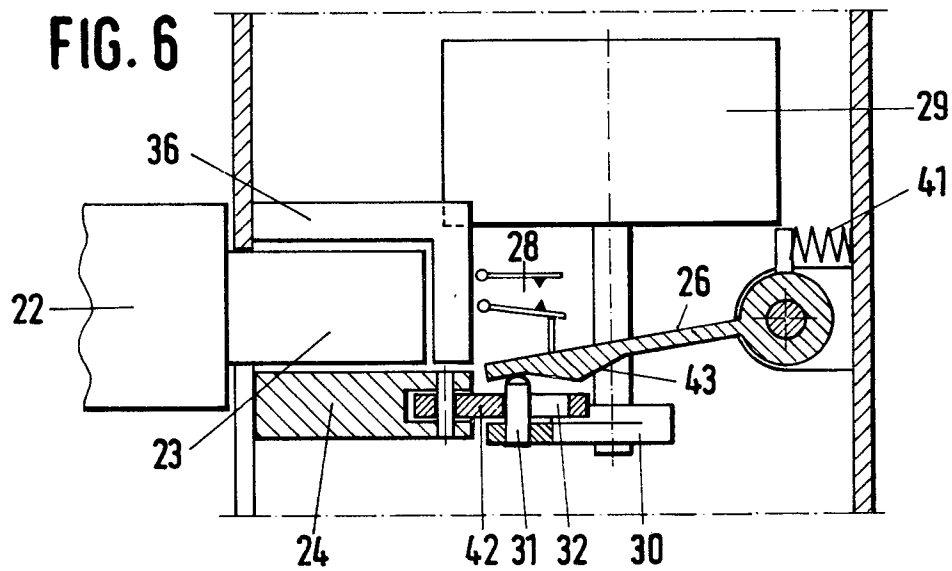


FIG. 7

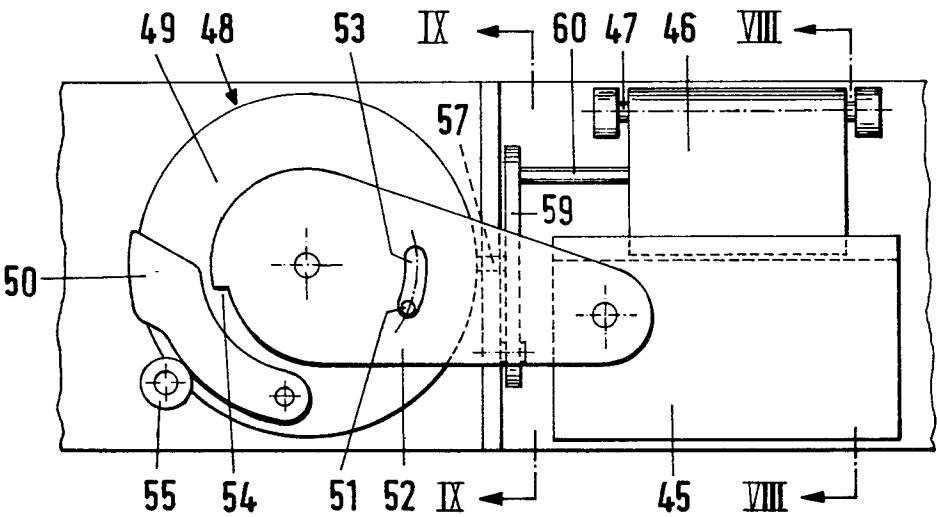


FIG. 8

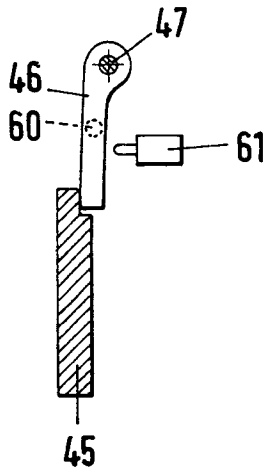
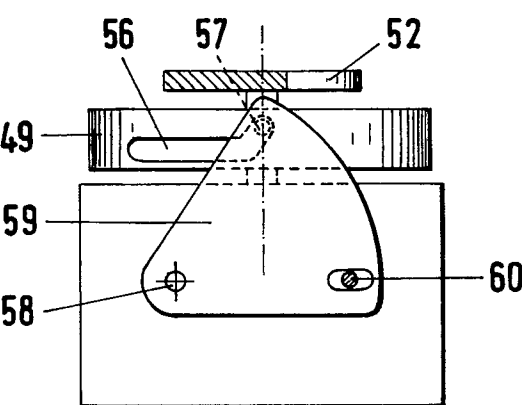


FIG. 9





European Patent
Office

EUROPEAN SEARCH REPORT

0022439
Application number

EP 79 200 395.6

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.7)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	<u>US - A - 3 521 921</u> (N. MIYAZAKI) * complete document * --	1,4,6	E 05 B 15/02 E 05 B 47/00
A	<u>DE - A - 2 325 566</u> (ZEISS IKON AG GOERZ-WERK) * page 4, last paragraph to page 6, first paragraph; fig. 1, 2 * --	1,4	
A	<u>FR - A - 695 009</u> (J. GIRARD) * complete document * --	1,4	TECHNICAL FIELDS SEARCHED (Int.Cl.7) E 05 B 15/00 E 05 B 47/00 E 05 C 13/00 E 05 C 17/00 E 05 C 21/00
A	<u>US - A - 3 829 138</u> (Y. MORITA) * complete document * --	1	
D	<u>NL - C - 152 626</u> (S. STAD et al.) * complete document * ----	1	
			CATEGORY OF CITED DOCUMENTS X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons
☒ The present search report has been drawn up for all claims			&: member of the same patent family, corresponding document
Place of search		Date of completion of the search	Examiner
Berlin		28-02-1980	WUNDERLICH