(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 463 175 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
29.09.2004 Bulletin 2004/40

(51) Int Cl.[7]: **H02G 5/04**, E05F 15/00

(21) Application number: **04425169.2**

(22) Date of filing: **12.03.2004**

(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 PL PT RO SE SI SK TR
Designated Extension States:
AL LT LV MK

(30) Priority: **19.03.2003 IT bs20030032 U**

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(54) Mobile feeder for anti-squashing edges on electrical gates

(57) The present invention relates to a mobile feeder for anti-squashing edges on electrical gates, comprising a section bar (10) fixed to the base of the sliding gate and open at the bottom, a pair of thin conductive sheets (11) located longitudinally in said profile and connected to the conductors of the anti-squashing edge, and a sliding block (12), which is fixed to the ground with one head (12') inserted into the sliding section bar, said head carrying wiping contacts (13) on which the thin conductive sheets slide, and to which the relative electrical conductors controlled by said power unit are connected.

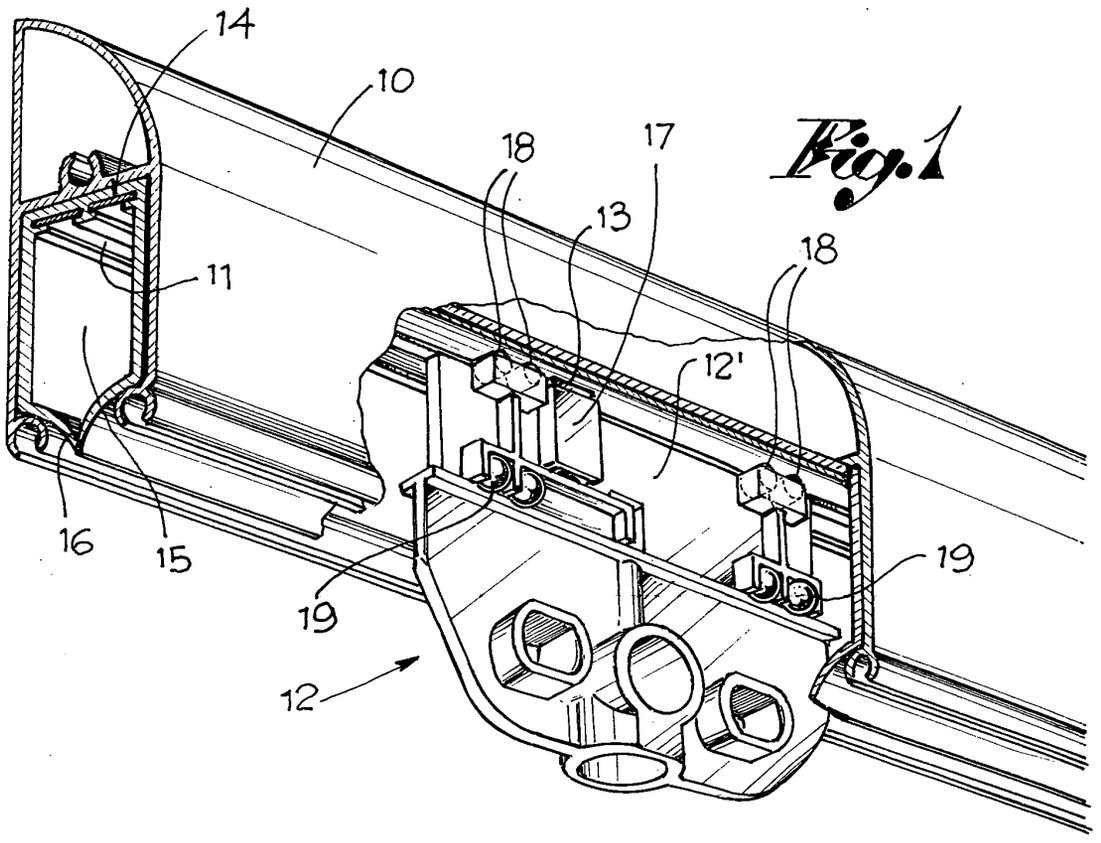


Fig. 1

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Description

[0001] The present invention relates to electrical gates fitted at least on the closure side of one anti-squashing edge, and refers, in particular, to a mobile feeder for this safety device.

[0002] As it is known, the regulations on safety for automated sliding gates require the presence, at least on the closure side of the gate, of an anti-squashing edge, which consists of a rubber profile, in which two electrical conductors are buried and connected to the power unit of the motor, which moves the gate. In the event of the edge being squashed or stressed, the two electrical conductors come into contact causing a drastic drop in the impedance of the circuit and consequent immediate interruption of the motor supply.

[0003] At present, the conductors of the anti-squashing edge are connected to the motor power unit by a wire carried by a pulling chain, which is located in a casing fixed to the base of the gate. However, this method of electrical connection is not particularly safe and reliable due to thermal changes and the structure of the wire, which tends to break after a certain number of bends.

[0004] The object of the present invention is to resolve the problems of the prior art and consequently propose a mobile feeder for anti-squashing edges that is much safer and more reliable even after a high number of moves of the gate, since it does not require the presence of mobile wires subjected to elevated wear and tear.

[0005] This object is achieved by means of a mobile feeder for anti-squashing edges on electric sliding gates comprising a section bar fixed to the base of the sliding gate and open at the bottom, a pair of thin conductive sheets set longitudinally in said profile connected to the conductors of the anti-squashing edges, and a sliding block fixed to the ground near a power unit controlling the motor, with one head inserted into the sliding section bar. The head of the sliding block carries sliding contacts, for example, small carbons, on which the thin conductive sheets slide, and to which the relative electrical conductors controlled by the power unit are connected.

[0006] An example of practical embodiment of the invention will be disclosed below in further detail with reference to the accompanying drawings, which are indicative and not limiting, wherein:

figure 1 shows a perspective view of a vertical section of the feeder according to the invention;
figure 2 shows a cross section of the feeder;
figure 3 shows an exploded view of the clamp on the floor of the sliding block;
figure 4 schematically shows the application of the feeder to a sliding gate; and
figure 5 shows an electrical connection diagram of the feeder.

[0007] The feeder according to the invention, globally indicated with reference numeral 1, comprises an upside down U shaped section bar 10 fixed to the base of a sliding gate 30, a pair of thin metal sheets 11 set longitudinally in said profile connected to the conductors of at least one anti-squashing edge 31 provided along the closure side of the gate, and a sliding block 12 fixed at the bottom on the floor near the motor apparatus 32 of the gate with one head 12' inserted into the sliding section bar. The sliding block has a pair of wiping contacts 13 on which the thin conductive sheets 11 slide, and to which the relative electrical conductors 33, which are controlled by an electronic power unit 34 controlling the motor, are connected. The power unit 34 draws the electrical supply from a supply device 35.

[0008] In greater detail, the thin conductive sheets are set in relative longitudinal slots 14 in an upper horizontal wall of an internal section bar 15, which is made of plastic, rubber or some other insulating material, and inserted into an open lower part at the bottom of the section bar 10 fixed to the base of the gate, which can be made of aluminium, for example. The head 12' of the sliding block 12 is set in said internal section bar and protrudes from this at the bottom passing through a pair of flexible lips 16 that prevent external agents from penetrating the section bar. The sliding block is also made of insulating material and has vertical slots 17 on its opposite sides where the wiping contacts 13, galvanically separated, are inserted, for example in the form of rectangular section carbons. Each carbon is held in contact with a relative thin conductive sheet by a spring 13'. The head of the sliding block is also fitted at the top with rollers 18, on which the thin conductive sheets 11 slide, and at the side with balls 19 for sliding on the internal section bar.

[0009] To allow the sliding block, which is fixed to the floor, to withstand vertical movements of the gate during sliding, a particular clamp is provided; this is made up of a base plate 20 from which a C element 21 extends, where a complementary element 22 is free to slide vertically, and which is integral with an intermediate vertical plate 23 fixed to the lower part of the sliding block protruding from the section bar 10.

[0010] In practice, whatever position the gate is in, any pressure on the anti-squashing edge 31 causes contact between the two conductors buried inside it, and therefore a lowering of the impedance of the circuit below a preset minimum threshold value, which is detected by the motor control power unit 34 by means of the thin sheets and the sliding contacts of the sliding block. Similarly, any breaking of one of the conductors is detected by the power unit 34, again by means of the described feeder, as an increase in the impedance above a maximum preset threshold value and consequently as a condition for interrupting the motor supply.

[0011] In any case, the proposed feeder is completely hidden and protected inside a section bar that is fixed to the base of the gate, it does not require the presence of flexible wires carried by pulling chains, since it makes use of the wiping contacts and therefore allows the ob-

jectives of safety, reliability, duration and compactness to be achieved.

Claims

1. Mobile feeder (1) for anti-squashing edges (31) on electrical gates (30), where sensory devices are buried in the anti-squashing edge (31), and where said sensory devices are connected to a power unit (34) to control the gate drive and which transmit a signal to said power unit after squashing of the edge or anomalies of the sensory devices, **characterised in that** it comprises a section bar (10) fixed to the sliding gate (30), a pair of thin conductive sheets (11) set longitudinally in said profile and connected to the sensory devices of the anti-squashing edge, and a sliding block (12) fixed to the floor with one head (12') inserted into the sliding section bar, said head carrying a pair of wiping contacts (13) on which the relative thin conductive sheets (11) slide, and to which the relative electrical conductors controlled by said power unit are connected.

2. Feeder according to claim 1, wherein said section bar is open towards the bottom to receive the head (12') of the sliding block (12).

3. Feeder according to claim 1 or 2, wherein the thin conductive sheets (11) are set in relative longitudinal slots (14).

4. Feeder according to claim 3, wherein said longitudinal slots are made in an internal section bar (15) made of insulating material and inserted at least into a lower part of the section bar (10) that is fixed to the base of the gate.

5. Feeder according to claim 4, wherein said internal section bar (15) completely covers the internal surface of said lower part of the section bar (10).

6. Feeder according to claim 5, wherein said internal section bar (15) is fitted at the bottom with a pair of facing elastic lips (16).

7. Feeder according to claim 6, wherein the head (12') of the sliding block (12) is set in the internal section bar (15) and protrudes from this at the bottom through said pair of elastic lips (16).

8. Feeder according to claim 7, wherein said elastic lips (16) tightly follow the part of the sliding block coming out of the section bar (10).

9. Feeder according to any one of the previous claims, wherein the head (12') of the sliding block is made of insulating material.

10. Feeder according to any one of the previous claims, wherein the head (12') of the sliding block has vertical slots (17) on its opposite sides in which the wiping contacts (13) are inserted.

11. Feeder according to any one of the previous claims, wherein the wiping contacts (13) are in the form of rectangular section carbons.

12. Feeder according to claim 11, wherein each wiping contact is pressed against a corresponding thin conductive sheet by a spring (13').

13. Feeder according to any one of the previous claims, wherein the head of the sliding block is fitted with rollers (18) on which the thin conductive sheets slide.

14. Feeder according to any one of the previous claims, wherein the head of the sliding block is fitted with balls (19) for sliding on the internal section bar.

15. Feeder according to any one of the previous claims, wherein the lower part of the sliding block protruding from the section bar is fixed to an anchored intermediate plate (23) with the possibility of vertical movements to a base plate (20) that is fixed to the floor.

16. Feeder according to claim 15, wherein said intermediate plate (23) has a part (22) set in a sliding slot (21) in the base plate (20) in a substantially transversal direction to the section bar (10).

17. Sliding gate comprising at least one wing (30) fitted with an anti-squashing edge (31) that is provided at least along one of its sides, where said anti-squashing edge comprises sensory devices connected to a power unit controlling the gate drive for transmitting a signal to said power unit after squashing of the edge or any anomalies of the sensory devices, **characterised in that** said sensory devices are connected to said power unit by a feeder according to any one of the previous claims.

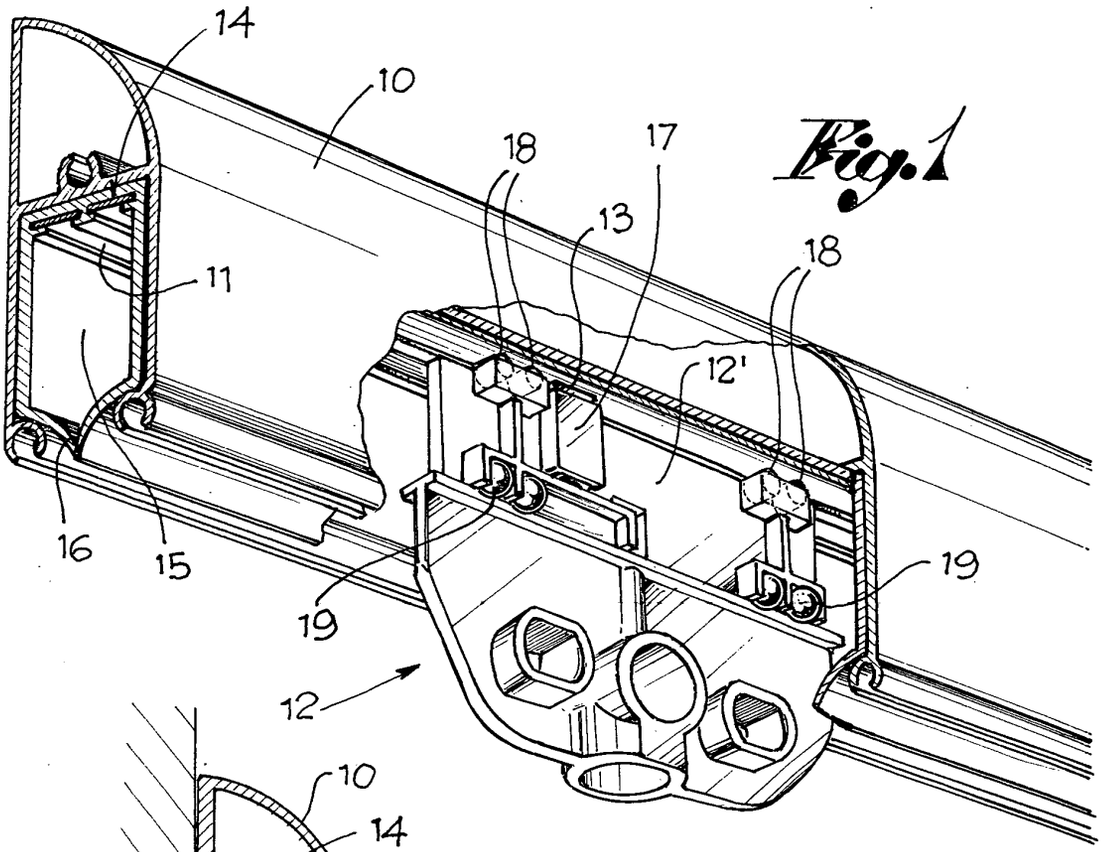


Fig.1

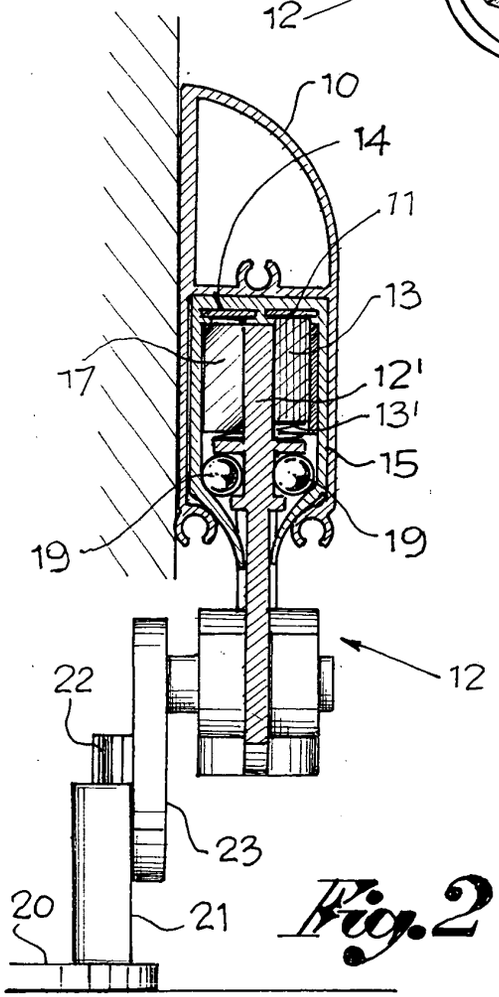


Fig.2

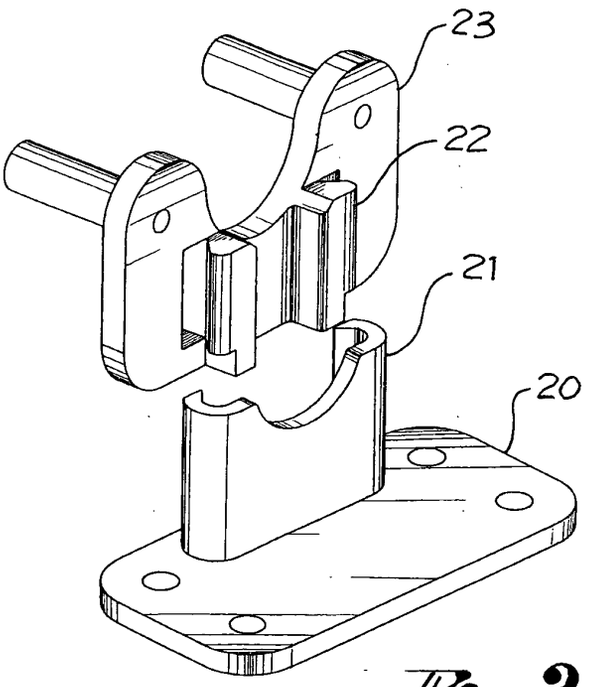


Fig.3

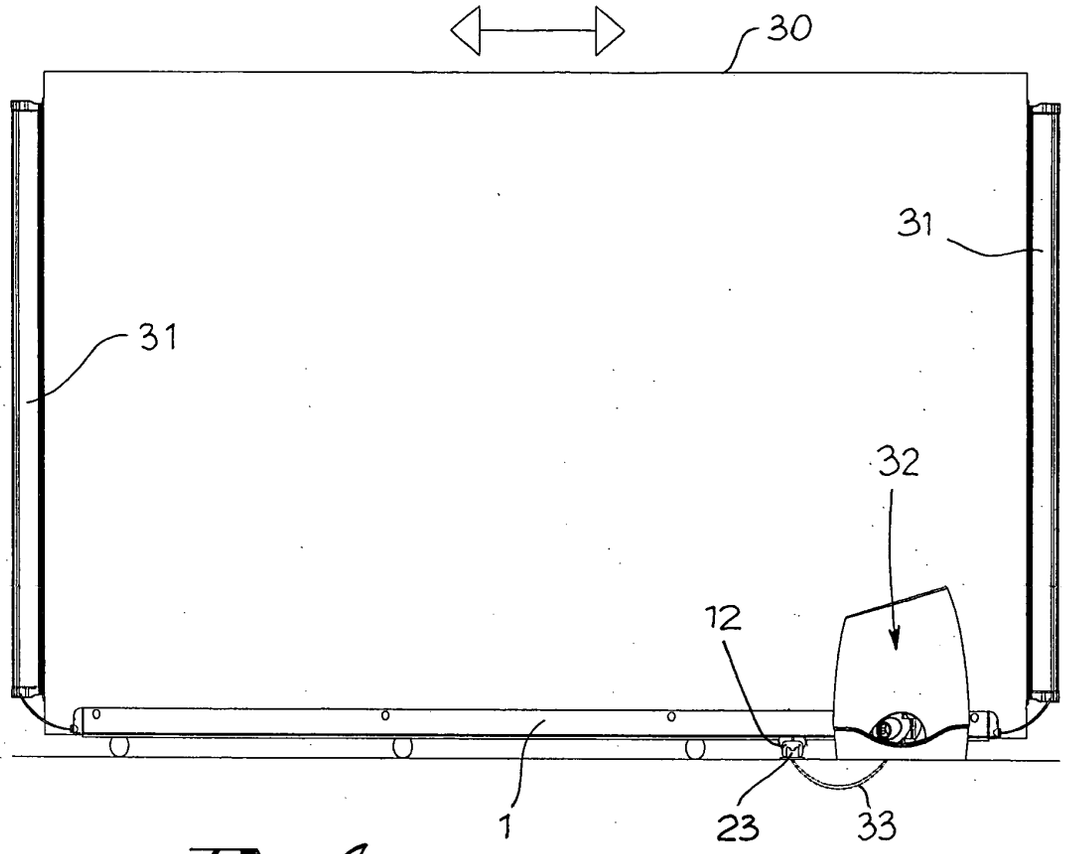


Fig.4

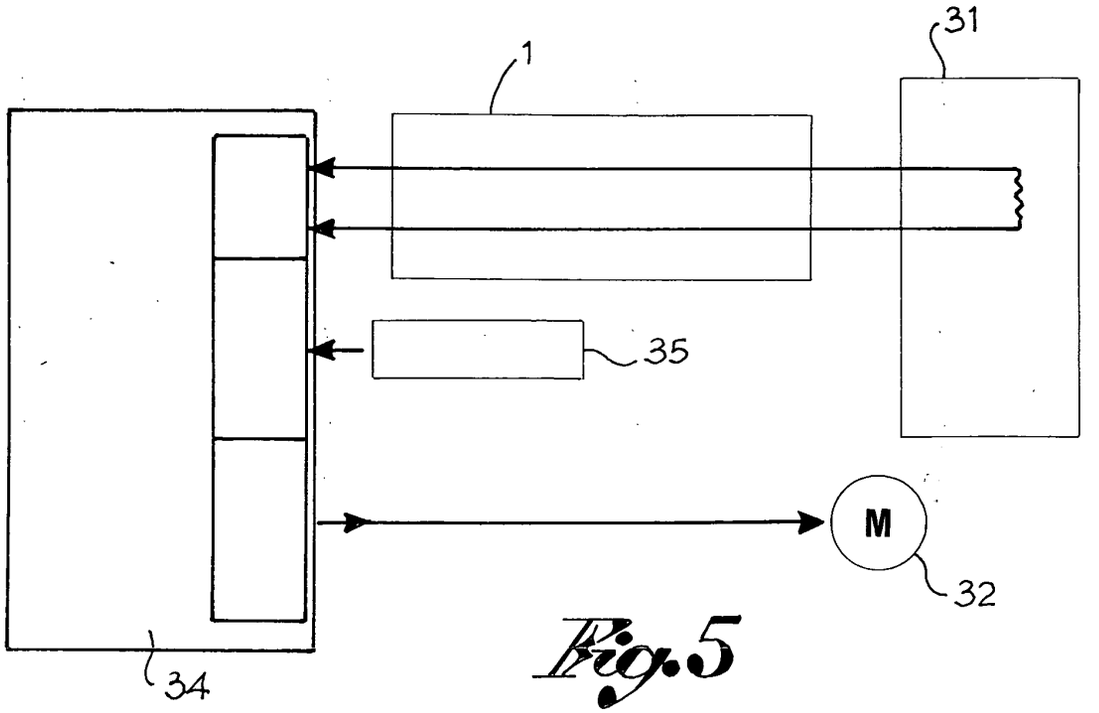


Fig.5

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EUROPEAN SEARCH REPORT

Application Number
EP 04 42 5169

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)
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X	PATENT ABSTRACTS OF JAPAN vol. 2003, no. 07, 3 July 2003 (2003-07-03) -& JP 2003 064972 A (SHIN NIKKEI CO LTD), 5 March 2003 (2003-03-05) * abstract; figures 1-10 *	1-5, 9-13,17	
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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

H02G
E05F
E06B
H01R
B60M

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	24 June 2004	Moueza, A

CATEGORY OF CITED DOCUMENTS

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