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(54) A children resistant gas lighter

(57) The children resistant gas lighter of the invention has an ignition sleeve (41) having a slit (411) defined therein and a safe cap (42) having a press surface, an opposite slide surface (422), a direction bar (423) formed on the slide surface which is inserted in the slit and is able to make the safe cap slidable in the slit. In use, a user has to move the safe cap (42) against a bias spring (428) by his thumb until the safe cap is no longer blocked by a top surface (61) of a flame cover (60) and then press down the safe cap (42). The invention makes the safety device more credible and makes it harder for children to understand how the ignition functions thus making it safer for children.

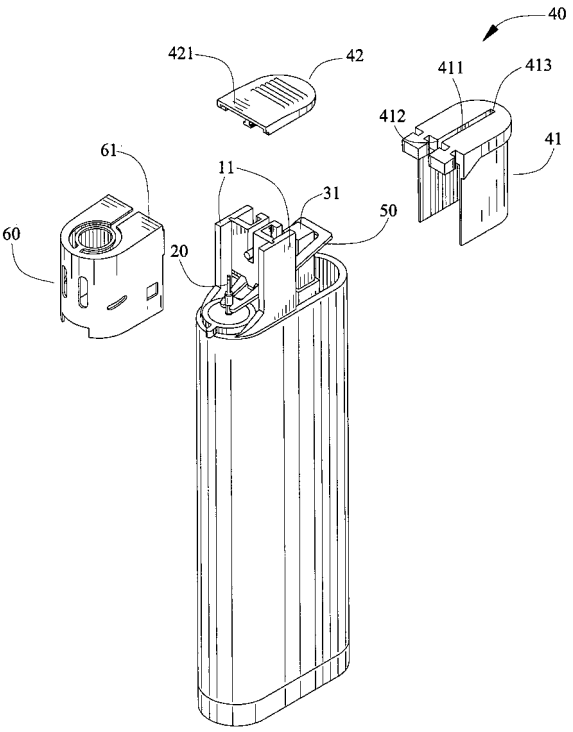

FIG. 2

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The invention relates to a children resistant gas lighter, and more particularly, to a gas lighter which is more credible in preventing unintentional ignition.

2. Description of the Prior Art

[0002] The lighter industry has been engaging for developing a simple yet credible children resistant device for prevent the lighter from unintentional ignition.

[0003] Such a lighter is diclosed in U.S. patent 5,839,892 named "Electronic Lighter with A Safety Device". The lighter has a press button means consists of an upper cover and "the upper cover has two hook-like ends of the press cylinder such that the hook-like ends of the upper cover are retained by a step portioin near an upper end of each second guide slot when the lighter is not in use."

[0004] The lighter of the aforementioned patent has a drawback. A user who does not know how to use the lighter very possibly may increase a pressing force to ignite the lighter while he cannot ignite it with ordenary force as use with conventional gas lighter. However the structure of safety of the two hool-like ends is too thin to withstand the greater force. In fact, either one of the two hook-like ends or both often breaks in actual use when an unkown user forcibly press the upper cover down, which would invalidate the safety device. It means the credibility of the safety device is not very satisfactory.

BRIEF SUMMARY OF THE INVENTION

[0005] The object of the invention is to provide a children resistant gas lighter having a more credible safety device.

[0006] The other object of the invention is to provide a children resistant gas ligher which is hard for children to get undersand how to ignition thus making it safer for children.

[0007] In order to accomplish the aforementioned objects, the present invention provides a children resistant gas lighter having a fuel-storage chamber for containing liquefied gaseous fuel; an upliftable gas release nozzle mounted on the fuel-storage chamber; a piezoelectric unit mounted on the fuel-storage chamber and having a piezoelectric button which when pressed downward, is able to startup the piezoelectric unit to generate sparks for ignition; a pair of pillars securely mounted on the fuel-storage chamber; an ignition trigger having a ignition sleeve slidably mounted on the pair of pillars which when pressed down, slidable with respect to the pair of pillars and when released, resumable to its undepressed position; a lever rotatably mounted on the fuel-storage chamber which when the ignition trigger is pressed down, is able to uplift the gas release nozzle to release the gaseous fuel and at the same time depress the piezoelectric button to startup the piezoelectric unit to generate sparks; a slit defined in the ignition sleeve; a flame cover having a top surface and being installed on the fuel-storage chamber and fixed to the pair of pillars; and, a safe cap having a press surface, an opposite slide surface, a direction bar formed on the slide surface which is insterted in the slit and is able to make the safe cap slidable in the slit, a pair of stoppers formed on the direction bar which is able to provent falling off of the safe cap with respect to the ignition sleeve when sliding, a pole formed on the direction bar, a bias spring installed on the pole biasing the safe cap with respect to the ignition sleeve, and, a shoulder near the first end of the safe cap.

[0008] These and other objectives, features, and advantages of the present invention will become apparent from the following detailed description, the accompanying drawings, and the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009]

FIG. 1 is a perspective view of the preferred embodiment of the children resistant gas lighter of the invention.

FIG. 2 is an exploded perspective view of the children resistant gas lighter of the inventoin shown in FIG. 1.

FIG. 3 is a side view of a safe cap of the invention shown in FIG. 1.

FIG. 4 is a bottom view of the safe cap of the invention shown in FIG. 1.

FIG. 5 is a side view of an ignition sleeve of the invention shown in FIG. 1. And,

FIG. 6 is an exploded perspective view of another preferred embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0010] With reference to FIGs. 1 and 2, the children resistant lighter of the invention has a fuel-storage chamber 10 for containing liquefied gaseous fuel, an upliftable gas release nozzle 20 mounted on the fuel-storage chamber 10, a piezoelectric unit 30 securely mounted on the fuel-storage chamber 10 and having a piezoelectric button 31 which when pressed downward, is able to startup the piezoelectric unit 30 to generate sparks for ignition, a pair of pillars 11 securely mounted on the fuel-storage chamber 10, an ignition trigger 40 having an ig-

nition sleeve 41 slidably mounted on the pillars 11 which when pressed down, slidable with respect to the pillars 11 and when released, resumable to its undepressed position, a lever 50 rotatably mounted on the fuel-storage chamber 10 which when the ignition trigger module 40 is pressed down, is able to uplift the gas release nozzle 20 to release the gaseous fuel and at the same time depress the piezoelectric button 31 to startup the piezoelectric unit 30 to generate sparks, and, a flame cover 60 having a top surface 61 and being installed on the fuel-storage chamber 10 and fixed to the pair of pillars 11. The gas release nozzle 20 is so positioned that the gaseous fuel being released is easy able to be ignited by the sparks generated from the piezoelectric unit 30.

[0011] As shown in FIGs. 3 and 4, a slit 411 is defined in the ignition sleeve 41. the slit 411 has an open end 412 and a close end 413. The ignition trigger 40 further has a safe cap 42 having a press surface 421 and an opposite slide surface 422. The safe cap 42 has a direction bar 423 formed on the slide surface 422 thereof. The direction bar 423 has a first end 424 close to the gas release nozzle 20 and a second end 425 in opposite. The second end 425 of the direction bar 423 is able to be inserted into the open end 412 of slit 411 thus making the direction bar 423 slidable in the slit 411. A pair of stoppers 426 may be formed on the direction bar 421 near the first end 424 thereof which is able to provent falling off of the safe cap 42 with respect to the ignition sleeve 41 when sliding. A pole 427 is formed on the direction bar 42 on which a bias spring 428 is installed. The safe cap 42 also has a shoulder 420 near the first end 424 thereof. In assembly, the second end 425 of the direction bar 423 is first inserted into the open end 412 of slit 411. And then the ignition buttom 41 is inserted into the fuel-storage chamber 10. Then the safe cap 42 is moved by thumb in a direction from the open end 412 of the slit 411 to the close end 413 until the flame cover 60 can be attached to the fuel-storage chamber 10 and the pair of pillars 11. Then the safe cap 42 can be released and it will slide along the slit 411 until the shouder 420 of the safe cap 42 stops just on the top surface 61 of the flame cover 60.

[0012] In use, as with reference back to FIG. 1, an action of pressing the safe cap 42 directly downward cannot ignite the lighter because the shoulder 420 of the safe cap 42 is blocked by the top surface 61 of the flame cover 60. In order to ignite the lighter, a user has to move the safe cap 42 against the bias spring 428 by his thumb and then press down the safe cap 42 when the safe cap 42 is no longer blocked by the top surface 61 of the flame cover 60. After ignition, the user may release the safe cap 42. The ignition buttom 41 slides back and the safe cap 42 then resumes its original position before moved under a biasing force from the bias spring 428.

[0013] The lighter of the invention may have a housing (not shown in the FIGs.) for containing the fuel-storage chamber 10. As shown in FIGs., the press surface 421 of the safe cap 42 may have a raised wale 429 for anti-slipping when moved by thumb.

[0014] FIG. 6 shows another embodiment of the invention. In this embodiment, the flame cover 60' has a recess 62' for receiving the shoulder 420' of the safe cap 42', making the top surface 61' of the flame cover 60' be at a same level as a top surface of the safe cap 42'.

[0015] The embodiments of the present invention as shown in the drawings and described above is exemplary only and not intended to be limiting.

[0016] From above description, it is seen that the objects of the present invention have been fully and effectively accomplished. Embodiment of the inventioin has been shown and described for the purposes of illustrating the functional and structural principles of the present invention and is subject to change without departure from the invention's principles. Therefore, this invention includes all modifications encompassed within the spirit and scope of the following claims.

Claims

1. A children resistant gas lighter having a fuel-storage chamber for containing liquefied gaseous fuel, an upliftable gas release nozzle mounted on said fuel-storage chamber, a piezoelectric unit mounted on said fuel-storage chamber and having a piezoelectric button which when pressed downward, is able to startup said piezoelectric unit to generate sparks for ignition, a pair of pillars securely mounted on said fuel-storage chamber, an ignition trigger having an ignition sleeve slidably mounted on said pair of pillars which when pressed down, slidable with respect to said pair of pillars and when released, resumable to its undepressed position, a lever rotatably mounted on said fuel-storage chamber which when said ignition trigger is pressed down, is able to uplift said gas release nozzle to release said gaseous fuel and at the same time depress said piezoelectric button to startup said piezoelectric unit to generate sparks, and, a flame cover having a top surface and being installed on said fuel-storage chamber and fixed to said pair of pillars, wherein the improvements comprising:

A slit defined in said ignition sleeve;
A safe cap having a press surface, an opposite slide surface, a direction bar formed on said slide surface which is insterted in said slit and is able to make said safe cap slidable in said slit, a pair of stoppers formed on said direction bar which is able to provent falling off of said safe cap with respect to said ignition sleeve when sliding, a pole formed on said direction bar, a bias spring installed on said pole biasing said safe cap with respect to said ignition sleeve, and, a shoulder near said first end of said safe cap.

2. The children resistant gas lighter as claimed in claim 1, wherein said children resistant gas lighter has a housing for containing said fuel-storage chamber.

3. The children resistant gas lighter as claimed in claim 1, wherein said the press surface of said safe cap has a raised wale for antislipping when moved by thumb.

4. The children resistant gas lighter as claimed in claim 2, wherein said press surface of said safe cap has a raised wale for antislipping when moved by thumb.

5. The children resistant gas lighter as claimed in claim 1, wherein siad flame cover further has a recess for receiving said shoulder of said safe cap, making said top surface of said flame cover be at a same level as a top surface of said safe cap.

6. The children resistant gas lighter as claimed in claim 5, wherein said children resistant gas lighter has a housing for containing said fuel-storage chamber.

7. The children resistant gas lighter as claimed in claim 5, wherein said the press surface of said safe cap has a raised wale for antislipping when moved by thumb.

8. The children resistant gas lighter as claimed in claim 6, wherein said press surface of said safe cap has a raised wale for antislipping when moved by thumb.

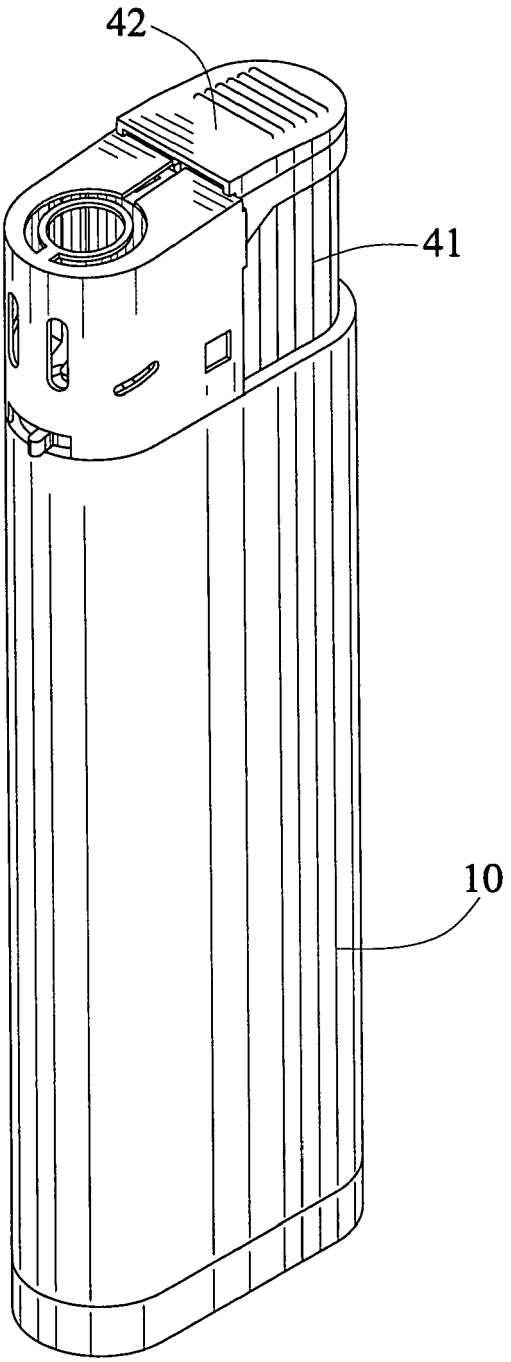

FIG. 1

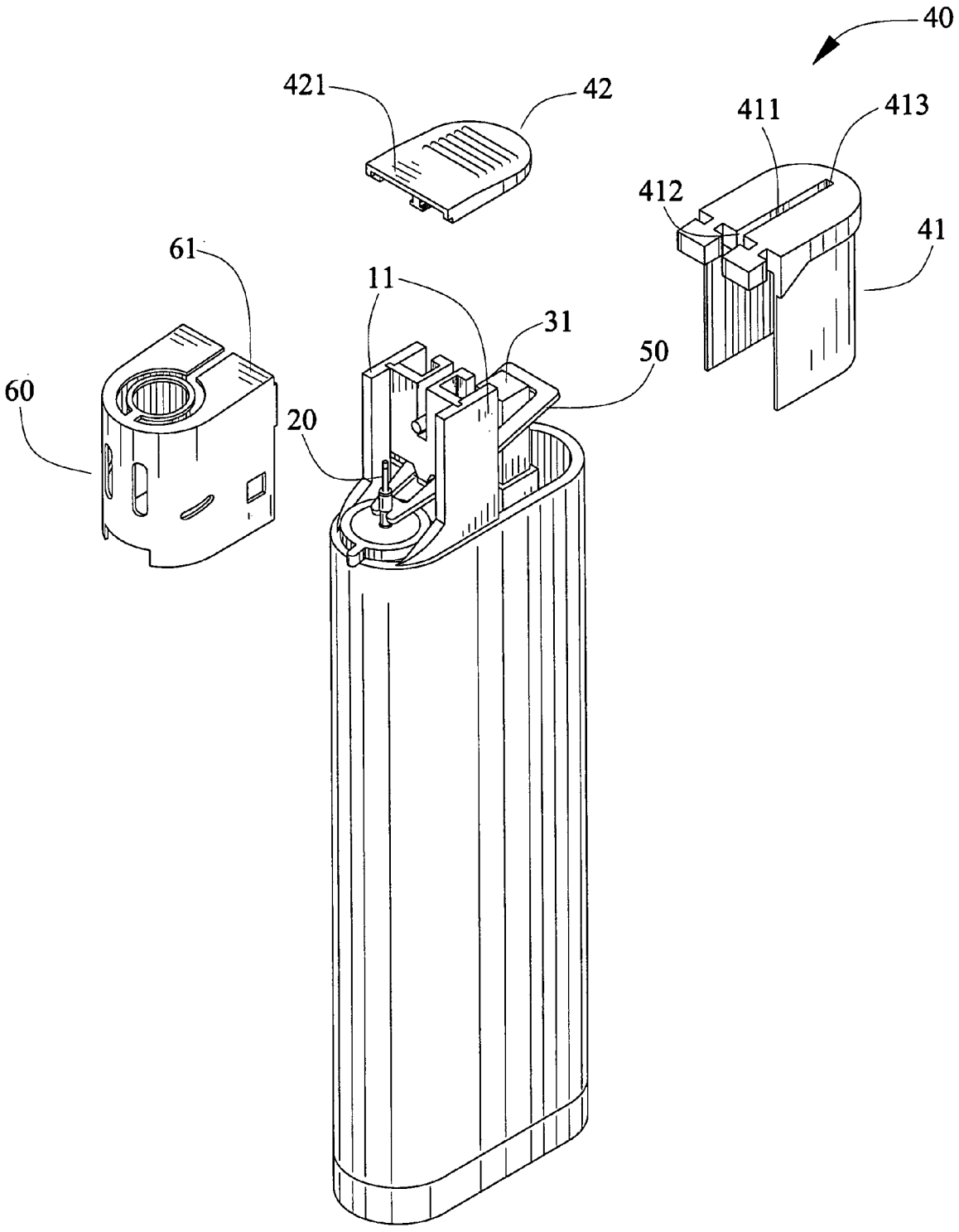

FIG. 2

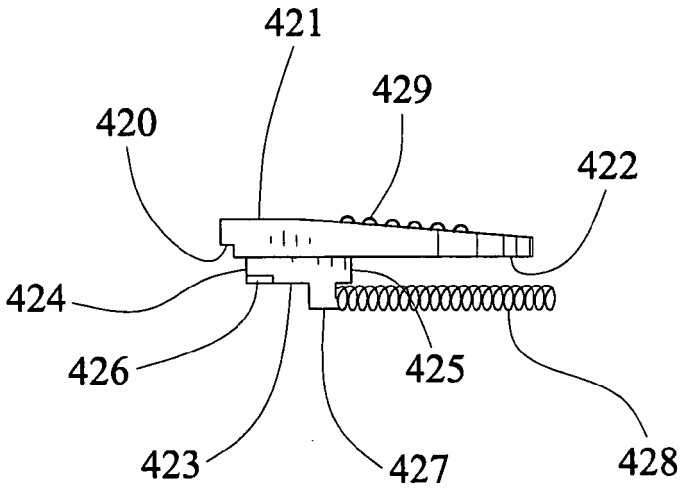

FIG. 3

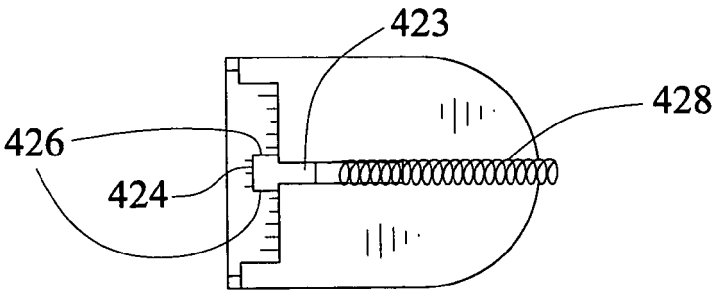

FIG. 4

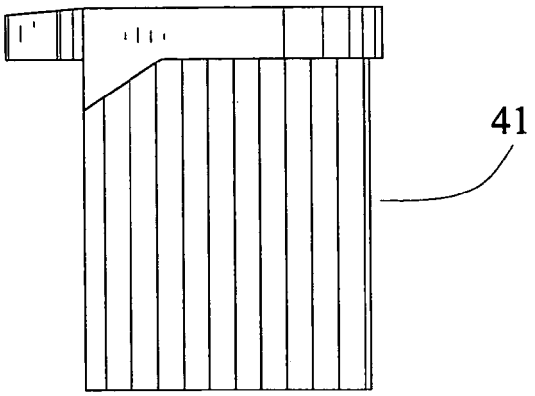

FIG. 5

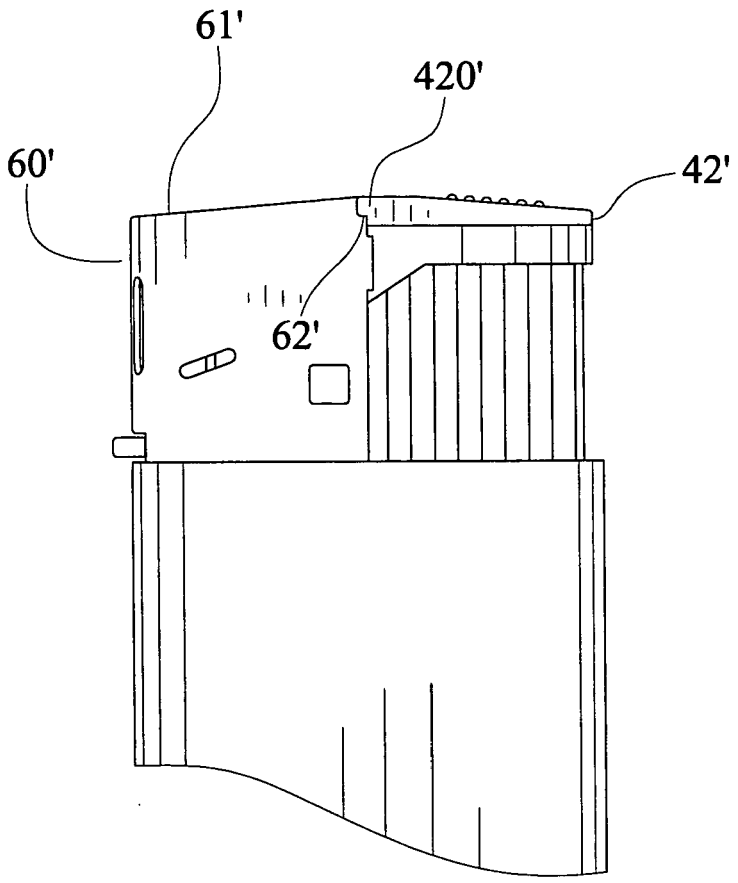

FIG. 6

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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