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### (54) MIRROR WITH A BUILT-IN LCD SCREEN WITH A SYSTEM FOR BEING LINKED TO A MOBILE DEVICE

(57) The invention relates to a mirror with a built-in LCD screen with a system for being linked to a mobile device comprising a mirror (1) associated with a frame (2), and wherein a perimetral LED light strip (3) is positioned between both, characterized in that said mirror (1) incorporates a housing for inserting an LCD screen (4) associated with respective touch sensors (5), in charge of switching on the LED light (5a) and the screen (5b), which in turn activates the search for a wireless connection; and wherein the LCD screen (4) is associated with a motherboard and two speakers, being powered by at least one power supply and connected with a Chromecasttype content receiving device, which will be in charge of receiving the transmission from an external electronic device; and in that the screen (4) is connected with a 5G Wi-Fi antenna.

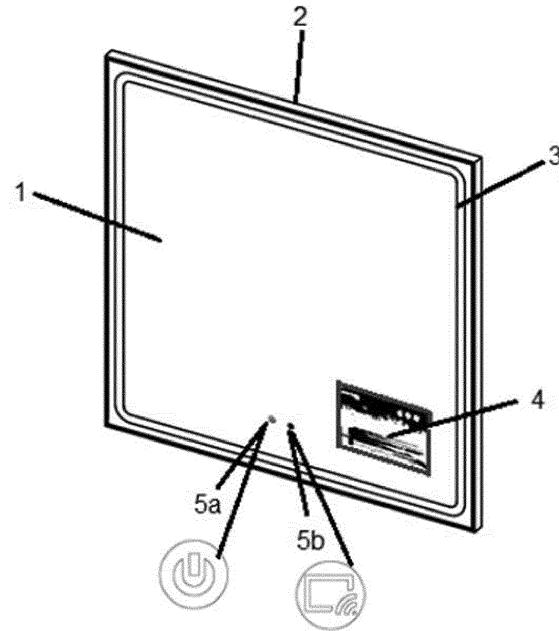


FIG.1

**Description****Object of the Invention**

**[0001]** The object of the present utility model specification is a mirror with a built-in LCD screen with a system for being linked to a mobile device (a smart phone, tablet, or the like), with a device allowing the user to send videos or images or any element that is visible in the actual mobile device from a mobile device with an Android® and with an iOS (Apple®) operating system, because whatever is being viewed in that moment on the screen of the mobile will be viewed on the screen of the mirror.

**Background of the Invention**

**[0002]** Today, the uptick in mobile technologies such as mobiles, tablets, or smartphones and their use practically all day means that it is becoming increasingly necessary to seek alternatives to conventional elements in a home to be built into and communicate with these means, and thereby perform a series of functions which previously had to be done by hand or by means of remote controls.

**[0003]** In that sense, the gradual advance in technology for building in such elements has provided a user with the ability to control many elements from a mobile device in order to streamline remote use so as to dispense with a large number of peripheral elements. It is therefore quite common today for home appliances, boilers, blinds, or innumerable elements to be controlled wirelessly through a mobile telephone or a tablet.

**[0004]** While it is true that this objective is superficially met by a wide array of elements and accessories intended for such purpose, it is no less true that the longing to always be connected or, for example, the continuous migration from conventional television to online subscription platforms which can be accessed by means of smart TVs, tablets, video consoles, or mobile telephones has made it necessary to increase the capacity of building these elements into other objects that can be used as display devices.

**[0005]** The invention herein proposed therefore relates to building a small screen into the glass of a bathroom mirror or the like, such that the user can send the content to be viewed by means of the screen, where the use thereof in an environment where accidents that may damage the device (being dropped in liquids, etc.) may occasionally occur can be dispensed with.

**[0006]** Various solutions which seek to palliate said drawback are known in the state of the art, yet none is carried out like the invention herein described. In that sense, Spanish patent ES 2 358 598 T3 describes a mirror with a built-in display for viewing purposes, with a polarizing mirror reflecting light of a first kind of polarization to a viewing side, the polarizing mirror allowing light of a second kind of polarization to pass through, and being provided with a display device at its non-viewing side,

which display device provides during use light of the second kind of polarization, the polarizing mirror having a surface area that is larger than that of the display device, characterized in that the non-viewing side of the polarizing mirror is provided with an absorbing polarizing layer at least at the part of the surface area not accommodating the display device, the absorbing polarizing layer absorbing light of the second kind of polarization.

**[0007]** In the same way, utility model ES 1 190 358 describes an improved bathroom mirror-cabinet assembly fundamentally consisting of a cabinet with a full-length mirror, consisting of a modular bathroom cabinet structure made from a high-strength water-repellent material with a lacquer finish in different colors, characterized in that this cabinet structure comprises built-in elements or devices, such as:

- An electric hot-air hand dryer.
- An automatic soap, liquid, or foam dispenser, with its corresponding receptacle.
- A folded paper hand towel dispenser.
- Perimetral LED lighting around the contour of the cabinet.
- LED lighting which lights up signaling logos provided in the glass of the mirror, indicating the existence and situation of the different elements and devices built into the structure.
- A fragrance dispenser.
- An internal electric panel for providing electric power and protection.
- An image and video projector built into the mirror.
- A set of regulators and timers for the mentioned LED lighting and image and video projector.

**[0008]** The applicant is aware of the existence of European patents EP 1 429 308 and EP 1 168 285, which describe a mirror with a non-reflective partial area arranged in the reflective surface and operating like an information transmitter, characterized in that at least one partial area of the surface of the mirror is clear like glass or completely transparent to view, and has a flat screen or display attached behind it, and in that the flat screen or display is equipped with a film on video.

**[0009]** In the same way, European patent EP 1 809 828 describes modular large-area wall element for interior design comprising a wall plate having a decorative surface pattern and forming at least one display region for a screen, the wall plate having a glass outer surface on the user side, which glass outer surface is provided with the decorative surface pattern by carrying out finishing, deposition, etching, sandblasting and/or plating over all or part of the surface of the wall plate, in particular on the rear surface of the wall plate opposite the outer surface, and the display region being provided as at least one section in the surface pattern, to the rear of which a flat screen is attached for electronic image display through the glass outer surface, characterized in that the encased flat screen is fitted in a housing in a modular

manner such that it can be removed in its casing, is set up for wireless transmission of image data and is formed such that it can be remote-controlled, and the wall element and/or the housing of the flat screen is/are formed so as to be splash-proof or watertight and/or steam-tight, at least one lighting region built into the surface pattern being provided which is formed so as to be transparent or transparent in part by means of a cutout in the surface pattern and is lit from behind by an artificial light source.

**[0010]** These inventions are designed to reproduce a video which was previously loaded by the user (with the risk involved in handling the mirror), conceived for applications where the video clip may be reproduced continuously without having to experience continuous changes such as, for example, in a shop or in a hotel. Handling the video requires the presence of a user who would have to access and handle the mirror to change the video clip or film on video. However, in the invention herein proposed, the user could change and program videos or images directly from a mobile telephone, without having to handle the mirror at any time. This avoids both possible malfunctions and accidents as a result of said action.

**[0011]** Finally, European patent EP 2 905 721 describes a wall element device with a wall plate forming at least one viewing area for a display, and on the user side a glass outer surface which is provided with a mirror coating and/or a decorative surface pattern by means of a mirror coating, full or partial lacquering, backing, etching, sandblasting, printing, and/or vapor deposition in particular on the rear part opposite the outer surface, the viewing area being implemented as at least one cutout in the mirror coating and/or decorative surface pattern to which a flat screen is placed for electronic image display through the glass outer surface on the rear part, with detector means being placed on the rear part adjacent to the cutout, being designed to detect a test image and/or an RF resonance signal of an object preferably held in a contactless manner next to the cutout, and the electronic control means placed on the flat screen cooperate with the detector means in such a way that, in response to detection of a predetermined test image and/or resonance signal, the control means produce an activation and/or acknowledgment signal acting through the wall panel.

**[0012]** The difference compared to the invention herein proposed is primarily that while in the case of the mentioned patent the user has to interact with the screen in order to choose the content to be reproduced, in the case of the invention herein proposed, the user only interacts with a mobile telephone or tablet, regardless of the operating system used, rendering the use thereof versatile, thereby making it an easy-to-handle tool that can even be built into virtual assistance or home automation devices.

#### Description of the Invention

**[0013]** The technical problem solved by the present

invention is to successfully build into a mirror that can be formed with a wide range of models a small, approximately 10-inch LCD-type screen which can be wirelessly connected via WiFi or 4G or 5G network with an electronic device that can be linked with and send multimedia content to the screen so that it can be reproduced (videos, music, or the like), or any element that can be seen in the mobile device itself, because whatever is been viewed in that moment on the screen of the mobile will be viewed on the screen of the mirror. To that end, the mirror with a built-in LCD screen with a system for being linked to a mobile device, object of the present utility model, comprises a mirror associated with a frame preferably made of PVC, wherein an LED light strip can be positioned between both, characterized in that said mirror incorporates a housing for inserting an LCD screen associated with touch sensors, respectively in charge of switching on the screen and activating the search for a wireless connection, and the light of the LED light strip or another touch sensor, such as for example a change in LED color temperature or a sensor for turning the demister on an off; and wherein the LCD screen is associated with a motherboard and two speakers, being powered by at least one power supply and connected with a content receiving device which will be in charge of receiving the transmission from an external electronic device to the screen connected with a 5G WiFi antenna.

**[0014]** As a result of its design, the bathroom mirror could be used as a means for viewing images, videos, or other multimedia elements or any element that can be viewed in the mobile device, because whatever is being viewed in that moment on the screen of the mobile will be viewed on the screen of the mirror while the user spends time in the bathroom, performing the tasks required in that instant, minimizing the risk of a malfunction in the electronic device as a result of moisture, being dropped in an element containing liquids, or the like.

**[0015]** The mirror herein designed will comply with all regulations in terms of its resistance in humid environments with an IP44 protection rating, allowing it to be used in any type of bathroom or the like, regardless of the degree of condensation produced therein. In this manner, for example, a user could view a video tutorial on how to apply makeup, how to tie a tie, or watch a sporting event while bathing without the risk of missing out on the live transmission, as well as watch the news, look at social media, check the time or email, without the user having to hold the electronic device with wet hands (with the subsequent risk of slipping and/or any accident associated with it).

**[0016]** Likewise, the mirror is designed such that once it has been completely assembled, it cannot be disassembled, thereby preventing any possible inappropriate handling by the user, and therefore affecting the electronic elements housed therein. Furthermore, it will incorporate a layer of polymer sealing around its perimeter which will augment the features it provides in terms of the seal and water-tightness, which are necessary to en-

sure the correct operation and immutability of its components.

**[0017]** The mirror herein described could be linked with any operating system (Android version 4.4, iOS version 7.0, or later versions), rendering the use thereof versatile both in private settings and in the service sector.

#### Brief Description of the Figures

**[0018]** A series of drawings which help to better understand the invention and relate expressly to an embodiment thereof, presented as a non-limiting example of the invention, are very briefly described below.

Figure 1 shows a perspective view of the front part of the mirror with a built-in LCD screen with a system for being linked to a mobile device, object of the present specification.

Figure 2 shows a front view of the mirror with a built-in LCD screen with a system for being linked to a mobile device, object of the present specification, in a practical embodiment with three touch sensors.

#### Disclosure of a Detailed Embodiment of the Invention

**[0019]** The attached figures show a preferred embodiment of the invention. More specifically, the mirror with a built-in LCD screen with a system for being linked to a mobile device, or screen mirror, object of the present specification, is characterized in that it comprises a mirror (1) associated with a frame (2) preferably made of PVC, and wherein a perimetral LED light strip (3) is positioned between both parts. The mirror (1) incorporates a housing for inserting an LCD screen (4) associated with respective touch sensors (5), respectively in charge of switching on the LED light (5a) and the screen (5b), which in turn activates the search for a wireless connection.

**[0020]** The LCD screen (4) is internally associated with a motherboard and two speakers, being powered by at least one power supply or driver in charge of supplying the electric current needed for the correct operation of the electronic elements. In turn, the screen (4) is connected with a Chromecast-type content receiving device or the like which will be in charge of receiving the transmission from the electronic device, so as to view it on the screen. Finally, the screen (4) will be connected with a 5G Wi-Fi antenna, allowing the wireless connection thereof and, therefore, the transmission and reception of content. All the electronic elements will be built into the bottom part of the mirror and will incorporate a covering by means of double-sided tape or the like which, together with a layer of polymer, will provide the water-tightness needed to obtain the required IP certification for products of this type.

**[0021]** In a preferred embodiment, the mirror (1) will incorporate two sensors, a screen activation sensor and another light activation sensor; in a particular embodiment, the mirror (1) may also incorporate a demisting

sensor (5c) associated with a demisting system built into the mirror (1) itself.

**[0022]** In its rear part, the mirror (1) will incorporate a cover made of PVC, polyamide, or another material with equivalent mechanical characteristics, which, once said cover is assembled, prevents it from being disassembled without breaking it, thereby ensuring the integrity of the assembly.

**[0023]** Likewise, the mirror (1) and the frame (2) will house, in the rear part thereof, a profile with holes allowing the anchoring thereof to the wall.

**[0024]** In a preferred embodiment, the speakers will have a power between 2 and 5 W, which will allow reproducing sound in stereo.

**[0025]** In a particular embodiment, the LED light strip (3) will incorporate between 100 and 190 LEDs per meter, which will allow correct lighting without shadowy areas, and will have a luminous flux between 1600 and 2500 lumens, all this depending on the model and the measurement to be developed.

**[0026]** In turn, in another practical embodiment the invention will incorporate a touch sensor by way of a switch for changing between warm and cool light, providing the user with the possibility of choosing between a color temperature between 3000°K and 5500°K.

#### **Claims**

**1.** A mirror with a built-in LCD screen with a system for being linked to a mobile device comprising a mirror (1) associated with a frame (2) preferably made of PVC, wherein a perimetral LED light strip (3) is positioned between both, **characterized in that** said mirror (1) incorporates a housing for inserting an LCD screen (4) associated with respective touch sensors (5), respectively in charge of switching on the LED light (5a) and the screen (5b), which in turn activates the search for a wireless connection; and wherein the LCD screen (4) is associated with a motherboard and two speakers, being powered by at least one power supply and connected with a content receiving device which is in charge of receiving the transmission from an external electronic device; and **in that** the screen (4) is connected with a 5G Wi-Fi antenna.

**2.** The mirror with a built-in LCD screen with a system for being linked to a mobile device according to claim 1, wherein the electronic elements are built into the bottom part of the mirror and incorporate a covering by means of double-sided tape or the like which, together with a layer of polymer, provide the water-tightness of the assembly.

**3.** The mirror with a built-in LCD screen with a system for being linked to a mobile device according to any of claims 1 to 2, wherein the mirror (1) incorporates

two sensors, a screen activation sensor and another light activation sensor.

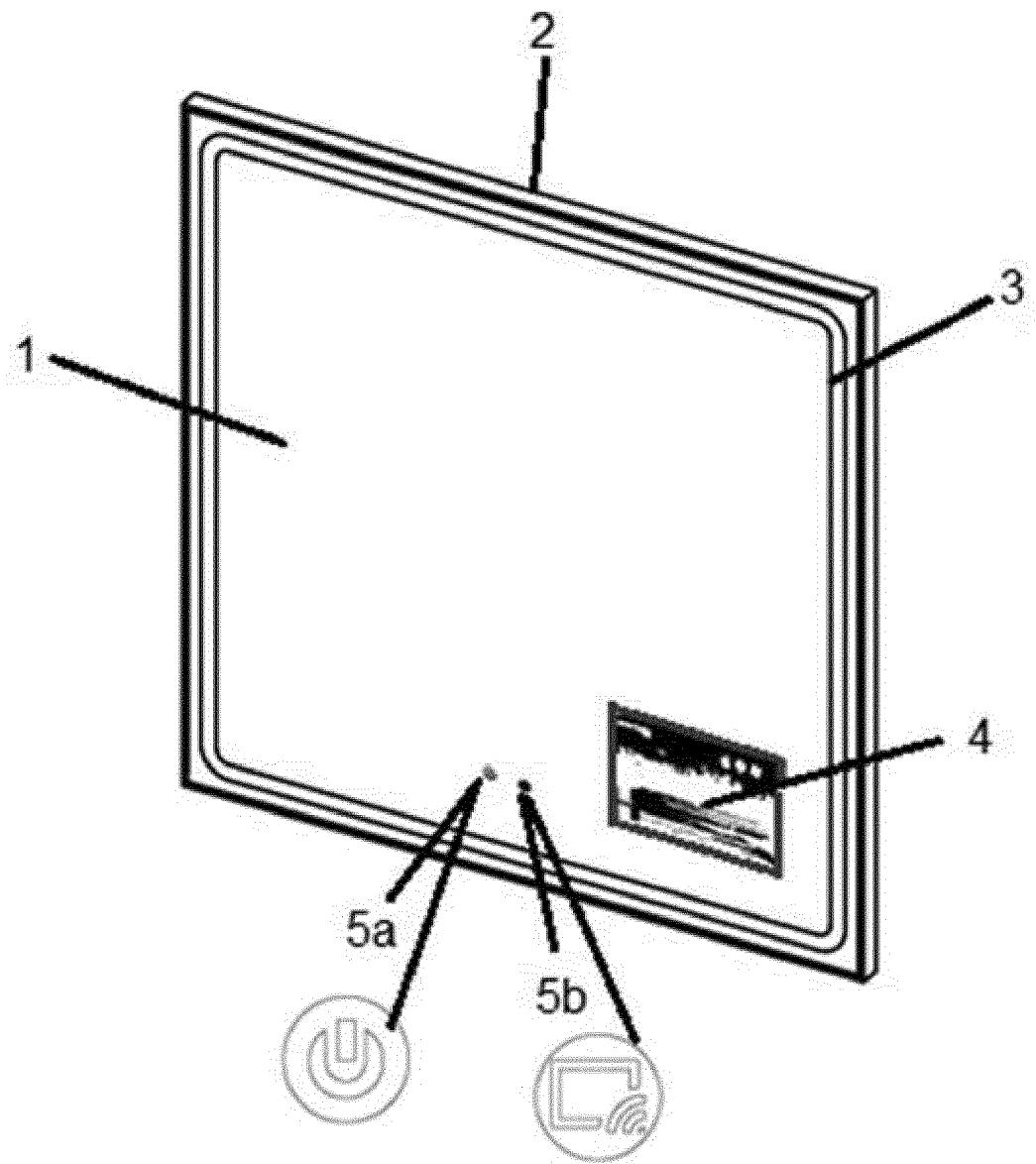
4. The mirror with a built-in LCD screen with a system for being linked to a mobile device according to any of claims 1 to 3, wherein the mirror (1) incorporates a third demisting sensor (5c) associated with a de-mister built into the mirror (1) itself. 5
5. The mirror with a built-in LCD screen with a system for being linked to a mobile device according to any of claims 1 to 4, wherein the mirror (1) incorporates in its rear part a cover made of PVC, polyamide, or another material with equivalent mechanical characteristics. 10 15
6. The mirror with a built-in LCD screen with a system for being linked to a mobile device according to any of claims 1 to 5, wherein the mirror (1) and the frame (2) house in the rear part thereof a profile with holes allowing same to be anchored to the wall. 20
7. The mirror with a built-in LCD screen with a system for being linked to a mobile device according to any of claims 1 to 6, wherein the speakers have a power between 2 and 5 W allowing sound to be reproduced in stereo. 25
8. The mirror with a built-in LCD screen with a system for being linked to a mobile device according to any of claims 1 to 7, wherein the LED light strip (3) incorporates between 100 and 190 LEDs per meter and has a luminous flux between 1600 and 2500 lumens. 30
9. The mirror with a built-in LCD screen with a system for being linked to a mobile device according to any of claims 1 to 8, wherein it incorporates a touch sensor by way of a switch for changing between warm and cool light. 35

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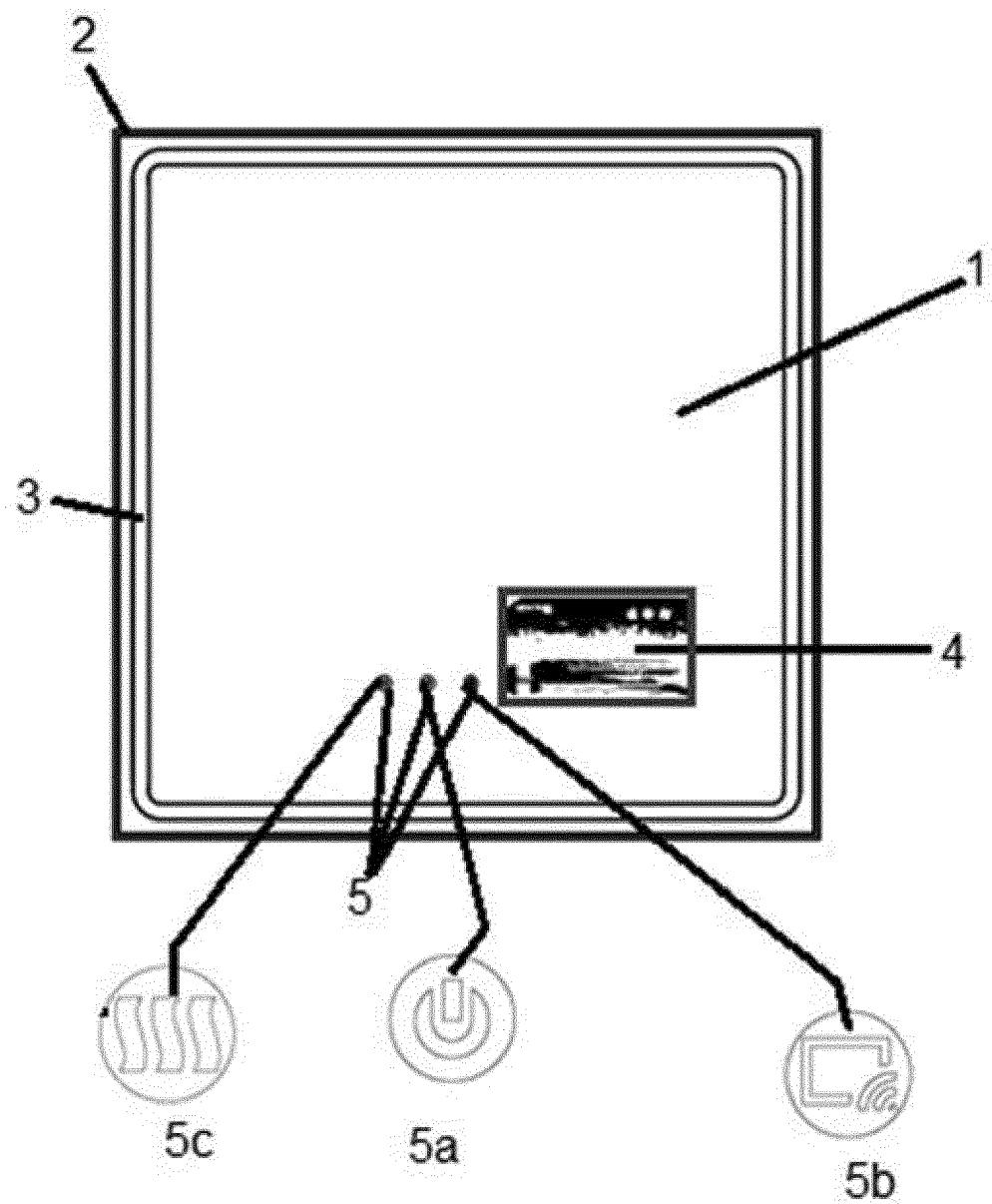
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**FIG.1**



**FIG.2**



## EUROPEAN SEARCH REPORT

Application Number

EP 20 38 2483

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50 2	The present search report has been drawn up for all claims		
55	Place of search The Hague	Date of completion of the search 19 October 2020	Examiner Ballerstein, Jens
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	
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ON EUROPEAN PATENT APPLICATION NO.

EP 20 38 2483

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