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(54) **METHOD FOR FIXING AN OBJECT TO A WALL, SANITARY FACILITY HAVING AN OBJECT BEING FIXED TO A WALL AND A SET INCLUDING AN OBJECT AND AT LEAST ONE FIRST METALLIC ELEMENT**

(57) Method for fixing an object (1) to a wall (2), wherein at least one first metallic element (3) is arranged in the wall (2), said at least one first metallic element (3) being used to fix the object (1) to the wall (2) by magnetic

force. Furthermore, a sanitary facility (10) and a set (11) comprising the object (1) and the at least one first metallic element (3) are proposed.

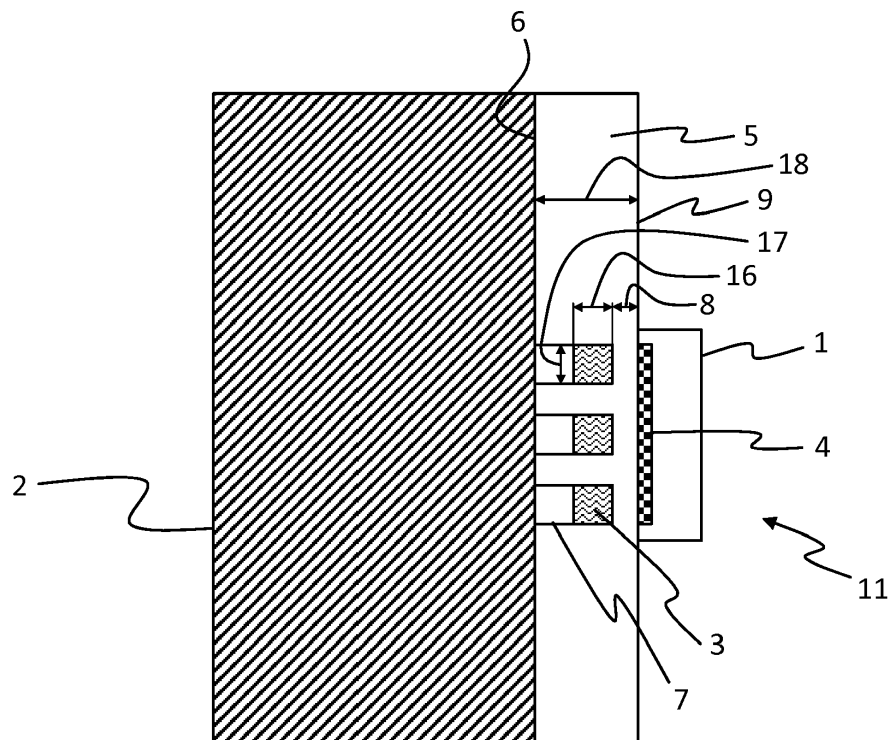


Fig. 2

Description

[0001] The present invention relates to a method for fixing an object to a wall, a sanitary facility having an object being fixed to a wall and a set including an object for releasable attachment to a wall.

[0002] In the state of the art, sanitary fittings are known by means of which a liquid, in particular water, can be supplied to a wash basin, sink, shower or bathtub as required. Sanitary fittings that can be controlled by a remote control are also known. By means of the remote control for example a temperature of the liquid, a jet type of the liquid and/or a withdrawal quantity of the liquid can be adjustable. The remote control is preferably mounted on a wall in the area of the sanitary fitting for convenient arrangement. The remote control can be stored in a retainer fastened to the wall by means of adhesive or screws, for example. However, the adhesive and the screws can damage the surface of the wall. In addition, when using a screw connection, there is a risk that liquid will enter the wall and cause damage there. Furthermore, the fixing material and any holes drilled in the wall are visible, which impairs the visual appearance of the wall.

[0003] The objective of the invention is therefore to solve, at least in part, the problems described with regard to the state of the art and, in particular, to provide a method for fixing an object to a wall by which the object can be fixed to the wall without damaging and/or visually impairing the wall. In addition, a sanitary facility with an object which can be attached to the wall without damage and/or visual impairment of the wall is also provided. Furthermore, a set is also provided with an object which can be attached to the wall without damaging and/or visually impairing the wall.

[0004] These objectives are achieved by a method, a sanitary facility and a set in accordance with the features of the independent claims. Further advantageous embodiments of the invention are specified in the dependent claims. It should be noted that the features listed individually in the dependent claims may be combined in any technologically meaningful manner and define further embodiments of the invention. In addition, the features specified in the claims are specified and explained in more detail in the description, with further preferred embodiments of the invention being presented.

[0005] Contributing to this is a method for fixing an object to a wall, wherein at least one first metallic element is arranged in the wall, said at least one first metallic element being used to fix the object to the wall by magnetic force.

[0006] The object may in particular be a remote control. For this purpose, the remote control may have at least one actuating element, for example at least one actuating knob, a touch pad, a gesture sensor, etc. The remote control can be connected to a control unit of the sanitary fitting, home appliance, etc. by cable or radio. In addition, the remote control can include an energy source such as at least one battery.

[0007] The object can be configured for remote controlling of a washbasin, a shower, a toilet, a drink-water station. In particular, the object may be configured to control a distant valve in a water guiding pipe or the like.

[0008] Sanitary fittings are used in particular to provide liquids, in particular water, as required at sinks, washbasins, showers and/or bathtubs. For this purpose, cold water with a cold water temperature and hot water with a hot water temperature can be supplied to the sanitary fittings, which can be mixed by the sanitary fittings, for example by means of a mixing valve or a thermostatic mixing cartridge, to a mixed water with a desired mixed water temperature. The cold water temperature is in particular maximum 25 °C (Celsius), preferably 1 °C to 25 °C, especially preferred 5 °C to 20 °C and/or the hot water temperature is in particular maximum 90 °C, preferably 25 °C to 90 °C, especially preferred 55 °C to 65 °C. The mixed water can then be fed, for example via a liquid line or a liquid hose, to a showerhead, which is designed, for example, as a head shower or hand shower. The shower can be fixed to a support, such as a wall or ceiling, or can be moved by a user. By means of the shower the liquid is sprayable in particular with a plurality of different jet types. The remote control can be used, for example, to set the mixed water temperature, the type of jet and/or the quantity of mixed water to be drawn off. Alternatively, the object can be a mirror or a shelf, for example.

[0009] The wall can in particular be a building wall. The wall can, for example, be at least partly a brick wall and/or at least partly concrete. In particular, the wall is vertical.

[0010] In the wall there is at least one first metallic element, by means of which the object is attached to the wall by magnetic force. "In the wall" means in particular that the at least one first metallic element is not arranged at an outer surface of the wall and thus visibly. In particular, the metallic element does not form a part of the outer surface of the wall. Furthermore, a multiplicity or a plurality of first metallic elements in particular can be arranged in the wall. For example, 2 to 20 first metallic elements, preferably 5 to 15 first metallic elements, can be arranged in the wall. The at least one first metallic element is arranged in particular in a region of the wall, in which the object is to be fastenable at an outer surface of the wall. In addition, several first metallic elements can be distributed over an area in the wall which (essentially) corresponds to a contact surface between the wall and the object. The individual first metallic elements may have a length (particularly perpendicular to the outer surface of the wall) of, for example, 2 mm (millimetres) to 20 mm, preferably 5 mm to 15 mm. Furthermore, the individual first metallic elements, in particular orthogonal to their length, may have a diameter which, for example, is 5 mm to 20 mm, preferably 10 mm to 15 mm. In addition, the at least one first metallic element, in particular parallel to the outer surface of the wall, may have a circular, rectangular, or square cross-section. In addition, the at least one first metallic element, in particular parallel to the outer surface of the wall, may have a cross-section with an

area of 1 mm² (square millimeter) to 4 m² (square meter), preferably 25 mm² to 400 cm² (square centimeter) or particularly preferably 25 mm² to 50 cm². The strength of the magnetic force in particular can be influenced by the choice of the length and/or the diameter of the at least one first metallic element. Furthermore, the magnetic force can be influenced in particular by the selection of the number of first metallic elements. The at least one metallic element is integrated into the wall, especially during the construction or manufacture of the wall. Due to the magnetic force acting between the at least one metallic element and the object, the object can be attached to the wall without any further accessories. A permanent accessible opening or damaging of the outer surface of the wall by drilling holes can be avoided therefore. This prevents liquid from entering the wall and the wall being visually impaired. In addition, the outer surface of the wall can be cleaned easily. Furthermore, the object is detachably attached to the wall so that a user can, for example, remove the object from the wall to control the sanitary fitting and then reattach it to the wall.

[0011] The object can include at least one second metallic element. The at least one second metallic element can be arranged in or on the object. Moreover, the at least one second metallic element can be arranged in particular in a region of the object, in which the object is to be fastenable at the outer surface of the wall. The magnetic force acts in particular between the at least one first metallic element in the wall and the at least one second metallic element of the object.

[0012] The at least one first metallic element in the wall and/or the at least one second metallic element of the object can be a magnet. If the at least one first metallic element is a magnet, the at least one second metallic element may consist at least in part of a ferrimagnetic or ferromagnetic material. If the at least one second metallic element is a magnet, the at least one first metallic element may consist at least in part of a ferrimagnetic or ferromagnetic material. Furthermore, the at least one first metallic element and the at least one second metallic element may be a magnet. In particular, the magnet can be designed as a permanent magnet.

[0013] The at least one first metallic element is not visible from outside the wall. This is achieved in particular by the complete integration of the at least one first metallic element into the wall.

[0014] The wall can comprise at least one cladding element, wherein the at least one first metallic element is arranged in the cladding element or on a rear side of the cladding element. The at least one cladding element can, for example, be a tile or a marble plate. After the arrangement of the at least one first metallic element on the at least one cladding element, the at least one cladding element can be attached to the remaining wall.

[0015] The at least one first metallic element can be arranged in at least one recess of the at least one cladding element. The at least one recess may be formed in the at least one cladding element prior to the attachment of

the at least one cladding element to the remaining wall. The at least one recess can be, for example, a non-penetrating hole or dent. Furthermore, the at least one recess can be formed on a rear side of the at least one cladding element. In addition, the at least one recess in the at least one cladding element can be pre-formed or produced by a worker during the manufacture of the wall. Furthermore, the shape of the recess can be adapted to the shape of the at least one first metallic element. In addition, the recess, in particular parallel to the outer surface of the wall, may have a circular, rectangular, or square cross-section. The recess could also be formed as a (elongated) ditch. The recess may have a length and/or width of 1 mm to 2 m, preferably 5 mm to 20 cm or particularly preferably 5 mm to 5 cm, in particular parallel to the outer surface of the wall. In addition, the recess, in particular parallel to the outer surface of the wall, may have a cross-section with an area of 1 mm² (square millimeter) to 4 m² (square meter), preferably 25 mm² to 400 cm² (square centimeter) or particularly preferably 25 mm² to 50 cm². The size of the recess can be adapted to the desired size of the mounting surface.

[0016] The at least one first metallic element can be fixed to the at least one cladding element by adhesive or sealant. The sealant may, for example, be at least partially silicone.

[0017] The at least one first metallic element can be arranged at a distance from an outer surface of the wall. The outer surface is in particular a surface of the wall visible from the outside. The distance is measured in particular perpendicular to the outer surface of the wall. Furthermore, the distance is preferably 1 mm to 10 mm.

[0018] According to another aspect, a sanitary facility is proposed which comprises at least the following components:

- an object,
- a wall, and
- at least one first metallic element arranged in the wall and which is used (equipped, designed, set-up,...) to fix the object to the wall by magnetic force.

[0019] In particular, the dimensions of the first metallic element are configured to a predetermined magnetic (holding) force to fix the object to the wall. Furthermore, the number and/or local arrangement of a number of first metallic elements may be configured to a predetermined magnetic (holding) force to fix the object to the wall as well as the design, dimensions, etc. of a specified object.

[0020] Furthermore, the sanitary facility may include a sanitary fitting. The sanitary facility is in particular a personal hygiene facility. For example, the sanitary facility may be a bathroom or a shower. For further details, the description of the inventive method is referred to.

[0021] According to a further aspect, a set is also proposed that comprises at least the following components:

- an object and

- at least one first metallic element for arrangement in a wall, the object being fixable to the wall by magnetic force with the aid of the at least one first metallic element.

[0022] The set includes a plurality of related parts. Furthermore, the set is designed and configured to fix the object to the wall by magnetic force using the first metallic element. The set may comprise a packaging including the object and the first metallic element. For further details, the description of the inventive method is referred to.

[0023] In particular, the use of a detachable magnetic joint is suggested wherein a direct contact between the object and the wall can be established.

[0024] A retainer for storing the object on the wall may be avoided or is regarded to be superfluous.

[0025] The wall may be provided with at least on (visible and/or sensible) mark to identify or localize the "hidden" metallic element in the wall.

[0026] The invention and the technical background are explained below by reference to the figures. It should be noted that the figures show a particularly preferred embodiment of the invention, but the invention is not limited to the embodiment. The same components in the figures are provided with the same reference numbers. The figures show exemplarily and schematically:

Fig. 1: a sanitary facility;

Fig. 2: a wall of the sanitary facility in an enlarged illustration; and

Fig. 3: a rear side of a cladding element of the wall.

[0027] Fig. 1 shows a sanitary facility 10 in the form of a shower. The sanitary facility 10 has a floor 15, a wall 2 and a ceiling 14. A sanitary fitting 12 is arranged on the ceiling 14 in the form of a shower head by which water jets 13 can be dispensed. An object 1 is attached to wall 2 by magnetic force. Object 1 in the example shown here is a remote control for sanitary fitting 12.

[0028] Fig. 2 shows the area of wall 2 marked with II in Fig. 1 in an enlarged illustration. Wall 2 encloses a plurality of cladding elements 5 in the form of tiles, of which only one cladding element 5 can be seen in Fig. 2. The cladding element 5 has a rear side 6, with which the cladding element 5 is bonded to the remaining wall 2. An outer surface 9 of the cladding element 5 is visible by a user of the sanitary facility 10 shown in Fig. 1. The cladding element 5 has a thickness 18 from the outer surface 9 to the rear surface 6, which is here (approx.) 18 mm. The thickness 18 is measured in particular perpendicular to the outer surface 9. In the wall 2 a large number of first metallic elements 3 are arranged, of which three can be seen in Fig. 2. In order to arrange the first metallic elements 3 in the cladding element 5, recesses 7 were made on the back of the cladding element 5 before the cladding element 5 was attached to wall 2. The first

metallic elements 3 are arranged in the recesses 7, so that they have a distance 8 to the outer surface 9 of the cladding element 5, which here is (approx.) 5 mm. Furthermore, the first metallic elements 3 have a length 16 (in particular perpendicular to the outer surface 9) and a diameter 17 (in particular orthogonal to the length 16). The length 16 is here (approx.) 10 mm and the diameter 17 (approx.) 12 mm. The first metallic elements 3 are magnets. Object 1 comprises a second metallic element 4. The first metallic elements 3 in wall 2 magnetically attract the second metallic element 4 of object 1 so that object 1 is detachably fixed to wall 2. To control sanitary fitting 12 shown in Fig. 1, a user of sanitary fitting 12 can detach object 1 from wall 2 and hold it in his hand. The user can then place object 1 back on the outer surface 9 of the cladding element 5 and in the area of the first metallic elements 3, so that object 1 is held or fixed to the wall 2 again by the magnetic force of the first metallic elements 3. Object 1 and the first metallic elements 3 can form a set 11.

[0029] Fig. 3 shows the rear side 6 of the cladding element 5 shown in Fig. 2, in which the plurality of recesses 7 are formed. In the example shown here, the cladding element 5 has nine recesses 7 for nine first metallic elements 3, which are not visible in Fig. 3. The recesses 7 for the first metallic elements 3 are aligned horizontally and vertically and are spaced apart. The first metallic elements 3 are already inserted in the middle and right recesses 7 and fastened to the cladding element 5 with a sealant 19. The sealant 19 closes the recesses 7 so that the first metallic elements 3 cannot detach from the recesses 7. The first metallic elements 3 have not yet been inserted into the left three recesses 7.

[0030] The present invention allows an object to be fixed to the wall without damaging and/or visually impairing the wall. Fixing an object to a wall by which the object can be fixed to the wall without damaging and/or visually impairing the wall.

Reference numbers

[0031]

1	object
2	wall
3	first metallic element
4	second metallic element
5	cladding element
6	rear side
7	recess
8	distance
9	outer surface
10	sanitary facility
11	set
12	sanitary fitting
13	water jets
14	ceiling
15	floor

- 16 length
- 17 diameter
- 18 thickness
- 19 sealant

rangement in a wall (2), the object (1) being fixable to the wall (2) by magnetic force with the aid of the at least one first metallic element (3).

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Claims

1. Method for fixing an object (1) to a wall (2), wherein at least one first metallic element (3) is arranged in the wall (2), said at least one first metallic element (3) being used to fix the object (1) to the wall (2) by magnetic force. 10
2. Method according to claim 1, wherein the object (1) includes at least one second metallic element (4). 15
3. Method according to one of the preceding claims, wherein the at least one first metallic element (3) in the wall (2) or at least one second metallic element (4) of the object (1) is a magnet. 20
4. Method according to one of the preceding claims, wherein the at least one first metallic element (3) is not visible from outside the wall (2). 25
5. Method according to one of the preceding claims, wherein the wall (2) comprises at least one cladding element (5) and wherein the at least one first metallic element (3) is arranged in the cladding element (5) or on a rear side (6) of the cladding element (5). 30
6. Method according to claim 5, wherein the at least one first metallic element (3) is arranged in at least one recess (7) of the at least one cladding element (5). 35
7. Method according to claim 5 or 6, wherein the at least one first metallic element (3) is fixed to the at least one cladding element (5) by adhesive or sealant. 40
8. Method according to one of the preceding claims, wherein the at least one first metallic element (3) is arranged at a distance (8) from an outer surface (9) of the wall (2). 45
9. Sanitary facility (10), at least comprising:
 - an object (1),
 - a wall (2), and 50
 - at least one first metallic element (3) arranged in the wall (2) and which is used to fix the object (1) to the wall (2) by magnetic force.
10. Set (11), at least comprising: 55
 - an object (1) and
 - at least one first metallic element (3) for ar-

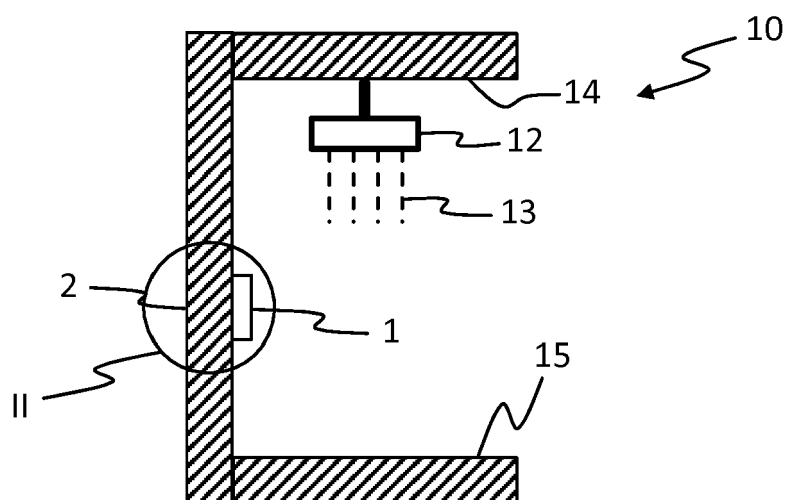


Fig. 1

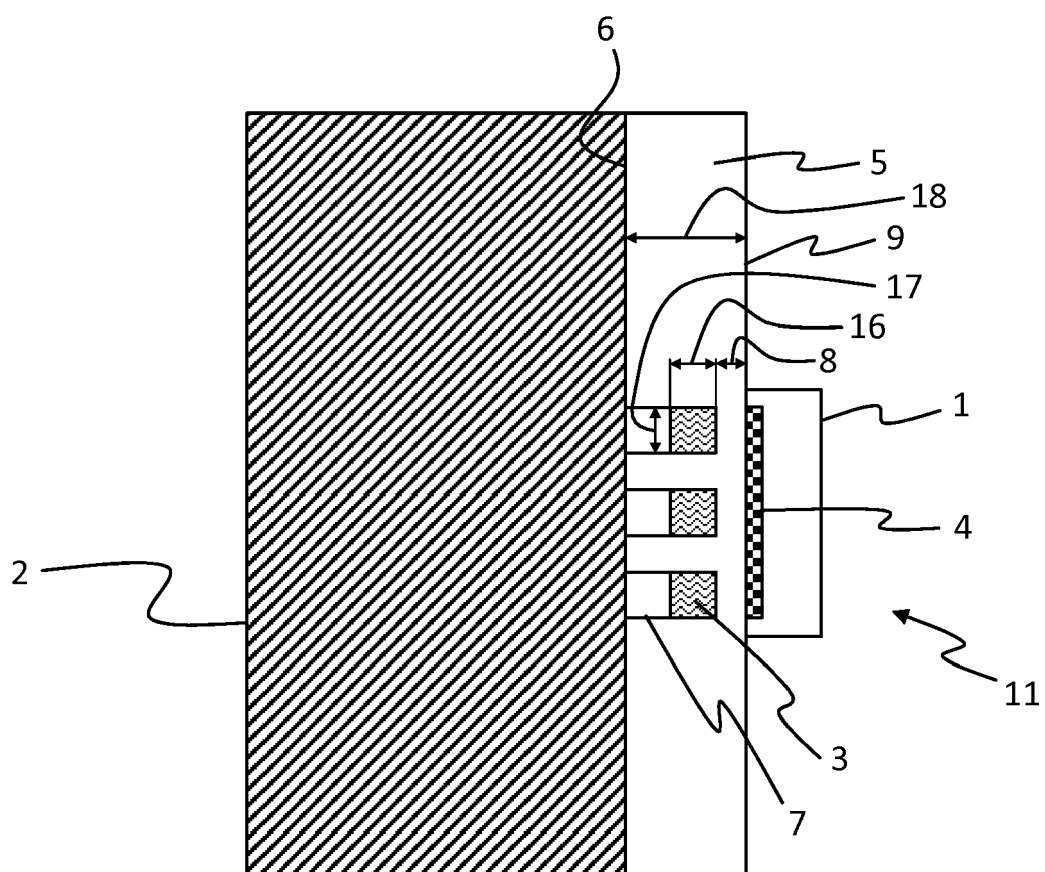


Fig. 2

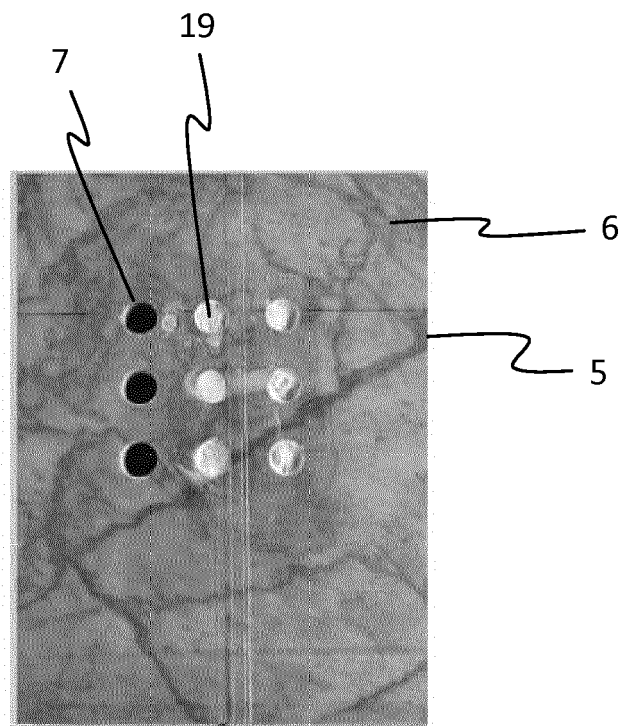


Fig. 3



EUROPEAN SEARCH REPORT

Application Number
EP 19 20 2768

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			TECHNICAL FIELDS SEARCHED (IPC)
			E04F E03C
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 6 March 2020	Examiner Horst, Werner
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 19 20 2768

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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