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(71) Applicant: **Ruiz Gallego, Juan**
12540 Vila-Real (ES)

(72) Inventor: **Ruiz Gallego, Juan**
12540 Vila-Real (ES)

(74) Representative: **Gallego Jiménez, José Fernando et al**
Ingenias Creaciones, Signos e Invenciones S.L.P.
Avda. Diagonal 421, 2
08008 Barcelona (ES)

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(54) **METHOD TO REPAIR AND PROTECT THE METAL POLES OR SHAFTS**

(57) A method for repairing and protecting metal shafts, the method comprising: - cleaning and sanitizing at least a lower portion of the shaft (1), including in this operation removal of dirt and when necessary removal of rust stains (11); - application of a primer or protective layer (2) on the treated area; - placement of a mold (3) around the treated area, forming a hollow cavity between the outer surface of the shaft (1) and the inner surface of the mold (3); - and the seal around the lower end of the mold (3) relative to the ground, forming a perimeter seal (4) with a hardening or curing material; - filling the hollow cavity with an environmentally friendly resin (5); - removing the perimeter seal (4) and the mold (3) once the resin (5) has hardened.

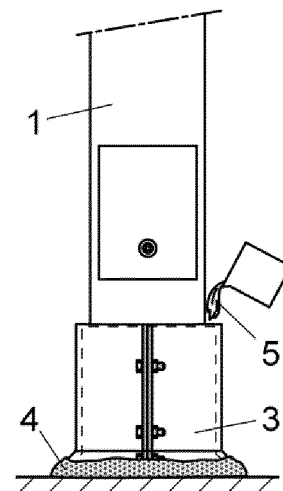


Fig. 5

Description

Object of the Invention.

[0001] The object of this invention is a method to repair and protect the metal shafts of street furniture.

Prior Art.

[0002] It is standard practice to use metal shafts to anchor and fasten various elements such as street lamps, traffic lights or signage to the ground. Fastening said shafts is performed by screwing them down or embedding them.

[0003] In any case, the lower portion of the shaft closest to the ground is more exposed to moisture from splashing water, dirt and other highly corrosive products such as animal urine, especially from dogs.

[0004] This causes the lower portion of the shaft to undergo problems with corrosion and to have a much lower lifetime than the rest of shaft.

[0005] One proposed solution for solving this problem is to use a protector created by a piece of plastic which is separate from the shaft and placed around it, and is fastened to the shaft by a screw.

[0006] On the bottom of said plastic part there is a channel for collecting the urine of dogs and a drain for same.

[0007] This protective part has the disadvantage that must be sealed with silicone and because it is plastic, it can be easily ripped out, broken or worn out and it does not fully guarantee that moisture and dog urine will not contact the street lamp causing deterioration thereof.

[0008] The holder of this invention is not aware of any information that would make it possible to solve the referenced problem and specifically to provide adequate protection to street furniture shafts which are already installed in order to effectively protect them from urine, dirt and moisture.

Description of the Invention.

[0009] To solve the above problems, the method to repair and protect the metal shafts of street furniture has been devised which is the object of this invention having characteristics which seek to make the formation of a resin collar possible on a lower portion of street furniture shafts, especially when they are already in use and secured or anchored to the ground.

[0010] This method comprises a first step of cleaning and sanitizing at least the lower portion of the shaft, including in this operation the removal of dirt and removing stains or corroded areas, if necessary. The method includes applying to the treated area, i.e., the previously cleaned and sanitized area, a metal primer or protective coating in order to provide adequate protection against oxidation.

[0011] Afterwards, a mold is placed around the treated

area upon which a primer or protective layer has been previously applied, which forms a hollow cavity between the outer surface of the shaft and the inner surface of the mold, and the seal around the perimeter of the lower end of the mold relative to the ground, forming an enclosure around the perimeter with a hardening or curing material, that will be temporarily used and which may, for example, be treated with plaster or another hardening material or silicone because its sole purpose is to temporarily close the lower end of the hollow cavity formed between the outer surface of the shaft and the inner surface of the mold. Subsequently, the method includes filling said hollow cavity with an environmentally friendly and non-polluting resin and finally the perimeter seal on the lower end of the mold is removed as well as the mold itself once the resin has hardened.

[0012] With this method we are able to make the resin form a collar around the lower portion of the shaft which remains fixed in its entirety to the outer surface of said lower portion which prevents moisture, dog urine or dirt from obtaining access thereto, since said collar is attached to both the shaft structure as well as to a sidewalk or fastening surface thereof.

[0013] The shape of the resin ensures that it is poreless, highly resistant, that it requires no maintenance and that it will have a long useful life.

[0014] The method of the invention also includes the possible application of an animal repellent product on the outside or inside of the resin.

Description of the Figures.

[0015] In order to supplement the description being made and for the purpose of helping to provide better comprehension of the invention's characteristics, as an integral part of said description a set of drawings is attached as non-restrictive illustrative examples, in which the following are shown:

- Figure 1 shows an overhead view of the shaft of a street lamp when in use and having a lower portion which is deteriorated with rust stains.
- Figures 2, 3, 4, 5 and 6 schematically show successive stages of repair and protection of the shaft shown in Figure 1 in accordance with the method of this invention.

Preferred Embodiment of the Invention.

[0016] In Figure 1 the shaft of a street lamp (1) is shown when in use, embedded in the ground, and having a deteriorated lower portion, in this case with some rust stains (11).

[0017] Repairing and protecting the shaft (1), in accordance with the method of the invention, initially comprises, as shown in Figure 2, cleaning and improving the bottom portion of the shaft (1) including the removal of

dirt, and in this case rust stains (11) by brushing and sanitized techniques, for example.

[0018] Next, as shown in Figure 3, a layer of primer (2) is applied to the cleaned and sanitized area which simultaneously acts as an anti-rust protectant and as a base for a resin which will be applied as indicated below.

[0019] Subsequently, as shown in Figure 4, a mold (3) is applied over the treated area constituted in this case by two half molds screwed together and the seal is implemented around the perimeter of the lower end of the mold (3) relative to the ground, for example with plaster, forming a perimeter seal (4) on its lower end.

[0020] As shown in Figure 5, once the perimeter seal (4) is formed, a hollow cavity defined between the outer surface of the shaft (1) and the inner surface of the mold (3) is filled with resin (5).

[0021] Once the resin (5) has hardened on the inside of the mold (3), the perimeter seal (4) and the mold (3) are removed, as shown in Figure 6. The resin (5) forms a resin collar (51) around the treated area of the shaft (1) which is fixed in its entirety to the shaft (1).

[0022] It should be mentioned that the mold (3) may include some holes inside which are suitable for the definition of the resin collar (51) with various elements, such as for example, an identifying shield (52) of the municipality that owns the shaft in question.

[0023] Now that the nature of the invention has been sufficiently described, as well as an example of the preferred embodiment, let it be known for all purposes that the materials, shape, size and arrangement of the elements described can be modified, provided that this does not suppose an alteration of the essential characteristics of the invention claimed below.

Claims

1. Method to repair and protect metal shafts of street furniture; specifically shafts already in use, anchored to the ground, **characterized in that** it comprises:

- cleaning and sanitizing at least the lower portion of the shaft (1), including in this operation, removal of dirt and if necessary, removal of rust stains (11);
- application of a primer or protective layer (2) on the treated area;
- placement of a mold around the treated area (3), forming a hollow cavity between the outer surface of the shaft (1) and the inner surface of the mold (3);
- a seal on the lower end of the mold (3) relative to the ground, forming a perimeter seal (4) with a hardening material or plaster,
- filling the hollow cavity with an environmentally friendly resin (5),
- removing the perimeter seal (4) and the mold (3) once the resin (5) has hardened.

2. Method according to claim 1, **characterized in that** it comprises the application of an animal repellant product on the outside or inside of the resin (5).

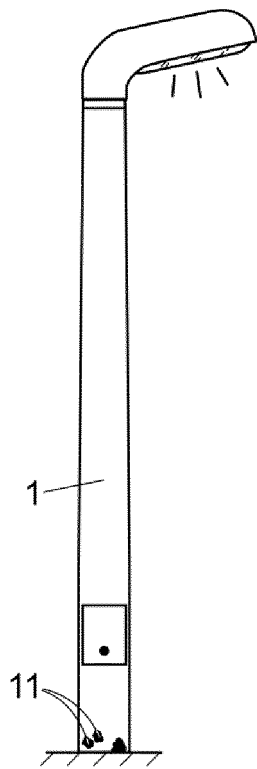


Fig. 1

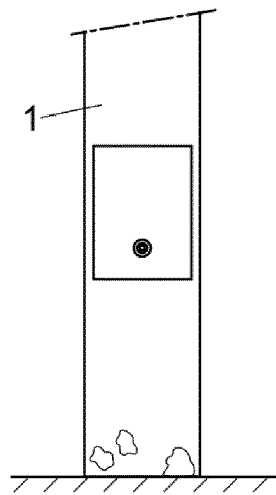


Fig. 2

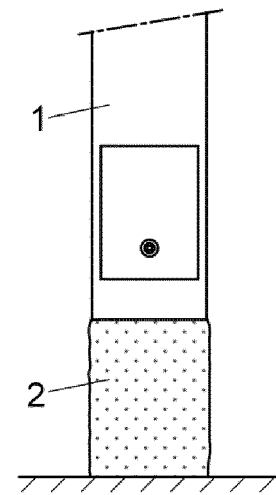


Fig. 3

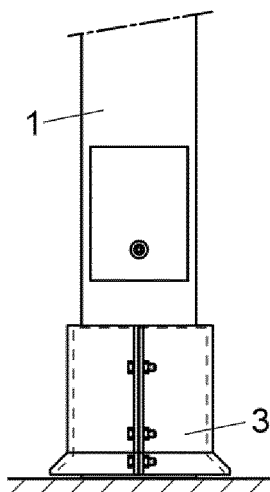


Fig. 4

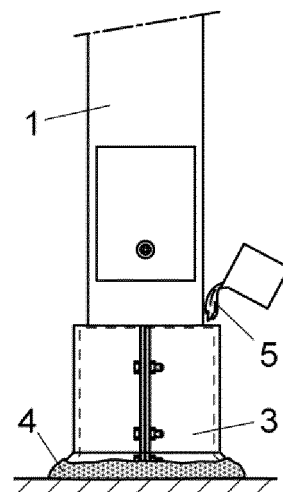


Fig. 5

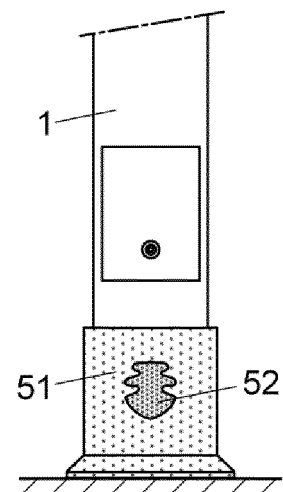


Fig. 6



EUROPEAN SEARCH REPORT

Application Number
EP 16 38 2026

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 3 May 2016	Examiner Valenta, Ivar
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document 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			

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 16 38 2026

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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