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(54) **Hopper for spreading mortar**

(57) The invention relates to a spreading cradle for spreading solid and/or liquid materials, such as mortar-like materials, which includes at least an adjustment mechanism for the mutual distance of mortar ridges being spread (1, 6), an adjustment mechanism for mortar-ridge height (2), and which spreading cradle includes an opening and closing mechanism of mortar-ridge flow (3, 4), and one or several mortar ridges are spreadable with the spreading cradle at different distances from each other, if required, such that the height and/or width of the mortar ridge and/or its position in the perpendicular direction in relation to the mortar spreading direction are variable by the spreading cradle.

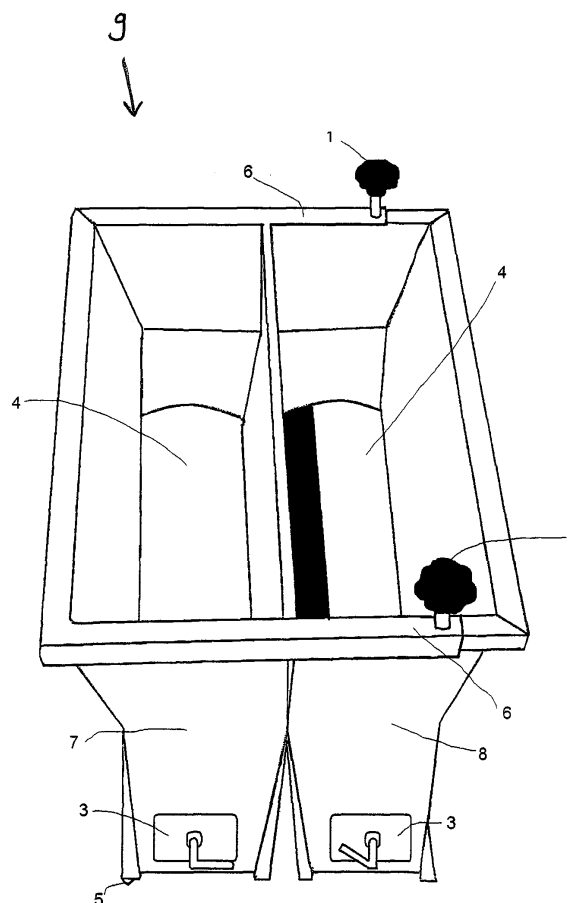


FIG.1

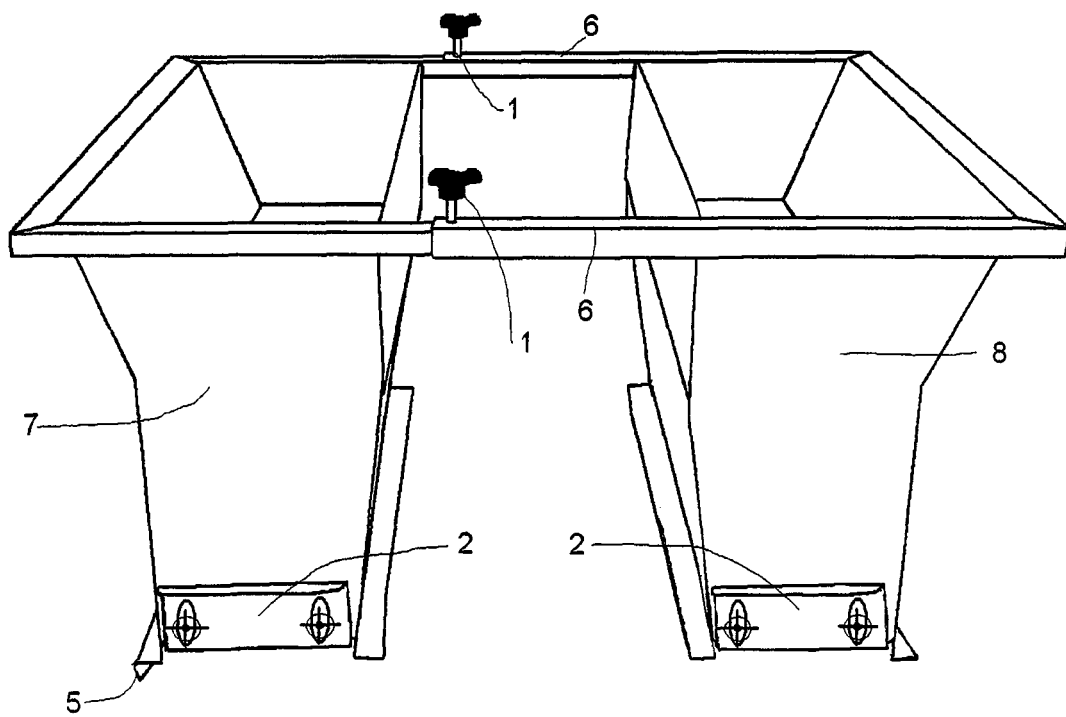


FIG.2

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Description

[0001] This invention relates to a device suitable for spreading mortar-like solid or liquid materials, which is next referred to as a spreading cradle. Mortar-like materials refer here to all materials spreadable onto the surface of pieces, such as e.g. cement-based mortars, paints, adhesives, concretes and fine rock material, paste etc. The materials can also be in molten form.

[0002] It is known to use for the spreading of spreadable mortar, such as e.g. building mortar, a spreading cradle in which the flow of spreadable mortar can be cut off e.g. by a closable bottom plate, if required. It is also known to use for the spreading a spreading cradle which spreads two ridges of spreadable mortar having a standard width the mutual distance of which can be varied. It is also known to adjust the height of a mortar bed being spread with a technical device, such as a plate, the height of which is adjustable. However, these previously known cradles cannot affect the height of the mortar bed, the mutual distance between the mortar ridges and the cutting-off of the mortar flow alike. In addition, they cannot vary the width of the mortar ridge being spread or its position in the perpendicular direction in relation to the spreading direction.

[0003] The spreading cradle according to the invention is characterised by what is stated in the characterising part of claim 1.

[0004] The spreading cradle according to the invention is further characterised by what is stated in claims 2-12.

[0005] The spreading cradles according to the invention employ several considerable advantages. Most of walls being spread include openings, such as door openings or window openings. The position, width, thickness and desired locations of the mortar ridges made by the spreading cradle according to the invention are selectable. The same spreading cradle can be used for spreading mortar onto walls of various widths and having or not having openings. The same spreading cradle can spread mortar ridges of different widths and thicknesses, which is particularly important when the thicknesses of the frame and the tier differ from each other or when wishing to even out the height difference of their upper surfaces. The novel type of an opening and closing mechanism of mortar flow operated from the side also enables the fact that the mortar ridge can be aligned sideways in a limited area by operating the mechanism partially open, whereby the width of adjacent mortar ridges can vary from each other, if required.

[0006] The invention will next be described in more detail by referring to the accompanying drawings in which

Fig. 1 shows a top view of a spreading cradle according to the invention intended for spreading two mortar ridges and seen from the end of the opening on the side of an opening and closing lever;

Fig. 2 shows a top view of the spreading cradle ac-

ording to the invention intended for spreading two mortar ridges and seen from the end on the side of height adjustment plates;

Fig. 3 shows a top view of the spreading cradle according to the invention intended for spreading one mortar ridge and seen from the end of the opening on the side of the opening and closing lever;

Fig. 4 shows a top view of the spreading cradle according to the invention intended for spreading one mortar ridge and seen from the end on the side of the height adjustment plates.

[0007] A spreading cradle 9 according to Figs. 1 and 2 substantially comprises all or at least three of the following: an adjustment mechanism for the mutual distance of mortar ridges 1, an adjustment mechanism for mortar-ridge height 2, an opening and closing mechanism of mortar flow 3, and a possibility to vary the width of the mortar ridge being spread and its position in the perpendicular direction in relation to the spreading direction.

[0008] The spreading cradle according to Figs. 3 and 4 substantially comprises the following: the adjustment mechanism for mortar-ridge height 2, the opening and closing mechanism of mortar flow 3 and the possibility to vary the width of the mortar ridge (such as building mortar ridge) being spread and its position in the perpendicular direction in relation to the spreading direction 4.

[0009] It is not necessary for a joint piece, such as a pipe, a bar or a strip 6, which joins spreading-cradle parts 7 and 8 of the spreading cradle intended for spreading different mortar ridges, to be straight as in Figs. 1 and 2, but it can be oblique in the vertical or horizontal plane or it can rise upright for part of its length, whereby it enables the simultaneous spreading of mortar (for bricklaying) onto adjacent wall parts being mutually asymmetrical of their height or otherwise. Reference number 1 designates a locking piece, such as a locking screw, which can lock the joint pieces at a desired point. The joint bar 6 can also be releasable from one or both parts of the cradle, whereby each spreading-cradle part 7 and 8 can be used separately. A guide 5 can be included by either one or both of the spreading-cradle parts 7 and 8, which can be identical but which do not have to be similar. It is also possible to join more than two spreading-cradle parts 7, 8 adjacently and they can also be joined successively e.g. for spreading mortar ridges (such as building mortar ridges) reacting to each other as regards their consistencies or not until having bonded.

[0010] The opening and closing mechanism of mortar flow 3 can be different from the one shown in Figs. 1 and 3. The opening and closing mechanism of mortar-ridge flow 3 can be in the spreading cradle 9 a movable opening/closing piece 4, such as a closing plate/opening plate or a rotatable closing/opening roller, which can control the mortar-ridge flow onto the surface being spread. In

the case of the closing and opening roller, it is partially open, whereby from the point being open the mortar ridge can be let to run onto a desired surface, such as a wall etc.

[0011] The opening and closing mechanism can be based e.g. on a horizontal plate pushed from the side of the spreading cradle which closes the flow of mortar being spread totally or partially and enables the varying of the width of the mortar ridge being spread and its position in the perpendicular direction in relation to the spreading direction 4. It is also possible to locate the opening and closing mechanism of mortar flow 3 and the adjustment mechanism for mortar-ridge height 2 both at the same end of the spreading cradle and at both ends of the spreading cradle.

[0012] The most advantageous embodiments of the invention were described above. However, the invention is not solely limited to those but can vary in various ways within the scope of the appended claims.

[0013] In an arrangement according to the invention, the spreading cradle, its spreading-cradle parts (the lower part of the spreading-cradle part from which the mortar ridge is spread) can be joined with one or several funnel-shaped pieces which can control the spreading of the mortar ridge. The funnel-shaped piece can be formed.

[0014] The spreading cradle according to the invention can also operate as a part of some other apparatus or larger assembly or it can be used by itself.

[0015] In the arrangement according to the invention, various adjustments can be manual or automated, i.e. the adjustment mechanism for the mutual distance of mortar ridges, the adjustment mechanism for mortar-ridge height as well as the opening and closing mechanism of mortar-ridge flow can each be manual or automated, e.g. operate with an electric drive or pneumatically or hydraulically.

[0016] If required, the spreading cradle according to the invention can be employed for spreading other materials, such as e.g. thickish paints, adhesives, concretes and fine rock materials or thick liquids etc. The spreadable materials can be mortar ridges of different consistencies or e.g. not reacting until having bonded, such as adhesive or building mortar ridges etc.

Claims

1. A spreading cradle for spreading solid and/or liquid materials, such as mortar-like materials, which includes at least an adjustment mechanism for the mutual distance of mortar ridges being spread (1, 6) and an adjustment mechanism for mortar-ridge height (2), **characterised in that** the spreading cradle includes an opening and closing mechanism of mortar-ridge flow (3, 4) with which the mortar ridge is alignable sideways in a limited area, and that the spreading cradle can spread one or several mortar ridges at different distances from each other, if required, such that the height and/or width of the mortar ridge

and/or its position in the perpendicular direction in relation to the mortar spreading direction are variable by the spreading cradle.

2. A spreading cradle according to claim 1, **characterised in that** the spreading cradle includes at least two spreading-cradle parts (7, 8) for mortar ridges, the distance of which spreading-cradle parts from each other is fixed or adjustable.
3. A spreading cradle according to claim 2, **characterised in that** the distance from each other is adjustable by a joint piece (6), such as a joint bar or a joint pipe or a joint strip.
4. A spreading cradle according to any one of previous claims, **characterised in that** it enables spreading mortar ridges onto walls of various widths, the distance of the spreading-cradle parts being adjustable by the joint piece.
5. A spreading cradle according to any one of previous claims, **characterised in that** mortar ridges are spreadable with the spreading cradle onto walls having and/or not having openings with the closable and openable opening and closing mechanism (3, 4).
6. A spreading cradle according to any one of previous claims, **characterised in that** the spreading-cradle part (7, 8), from which the mortar ridge is spreadable, is funnel-shaped, or it has been joined with a funnel-shaped part for controlling the spreading of the mortar ridge.
7. A spreading cradle according to any one of previous claims, **characterised in that** the joint piece (6) is formed, such as bent.
8. A spreading cradle according to any one of previous claims, **characterised in that** the joint piece (6) is formed, such as bent to be oblique or angular.
9. A spreading cradle according to any one of previous claims, **characterised in that** the height of the mortar ridge being spread is adjustable by one or several adjustment pieces (2), such as an adjustment strip or an adjustment plate, in the spreading cradle.
10. A spreading cradle according to any one of previous claims, **characterised in that** the opening and closing mechanism of mortar-ridge flow (3) is a movable opening/closing piece (4), such as a closing plate/opening plate or a closing/opening roller, in the spreading cradle, which can control the mortar-ridge flow.
11. A spreading cradle according to any one of previous claims, **characterised in that** the adjustment mech-

anism for the mutual distance of mortar ridges, the adjustment mechanism for mortar-ridge height and the opening and closing mechanism of mortar-ridge flow can each be manual or actuator-operated.

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12. A spreading cradle according to any one of previous claims, **characterised in that** the height or width of the mortar ridges or their position in the perpendicular direction in relation to the mortar-ridge spreading direction is selectable by mortar ridges when there are two or more mortar ridges.

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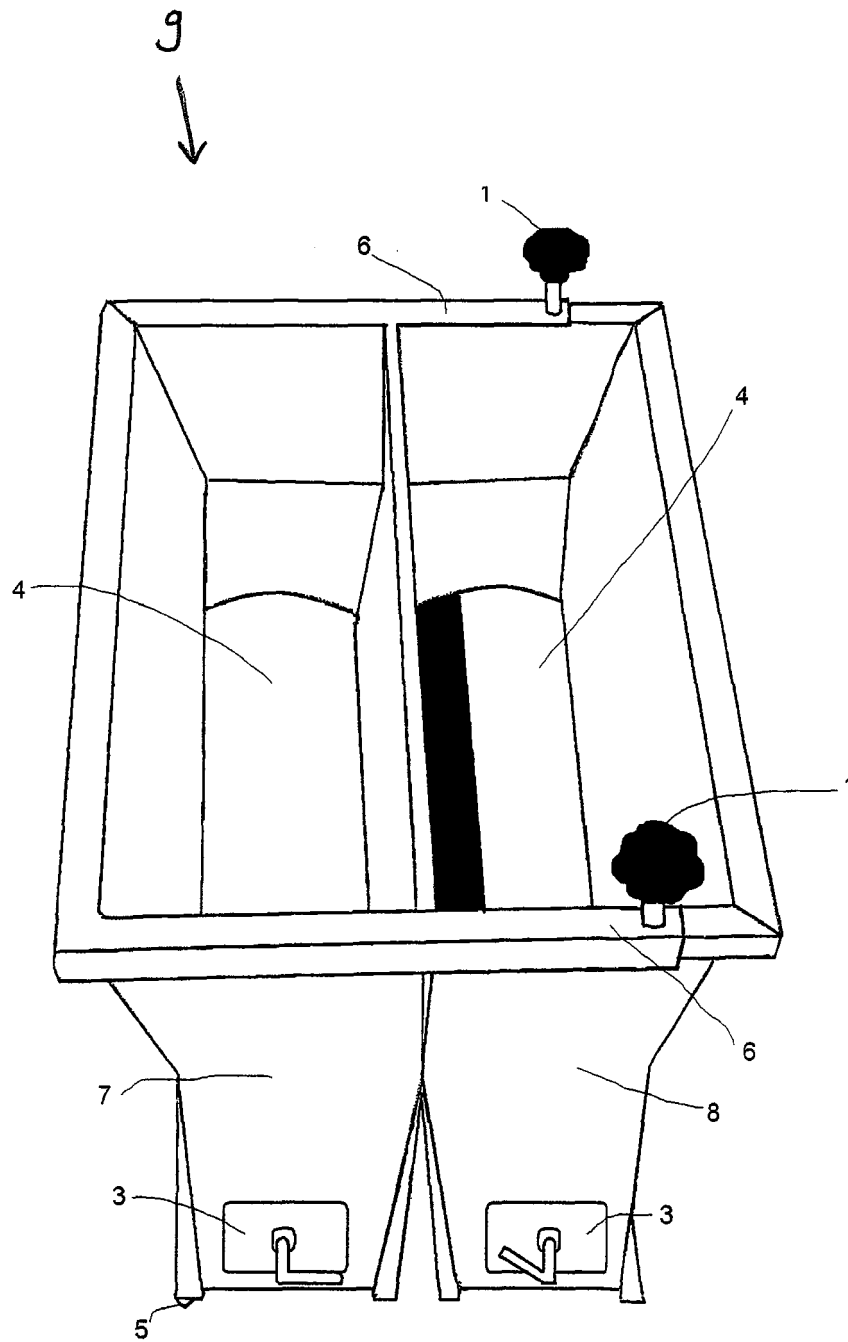


FIG.1

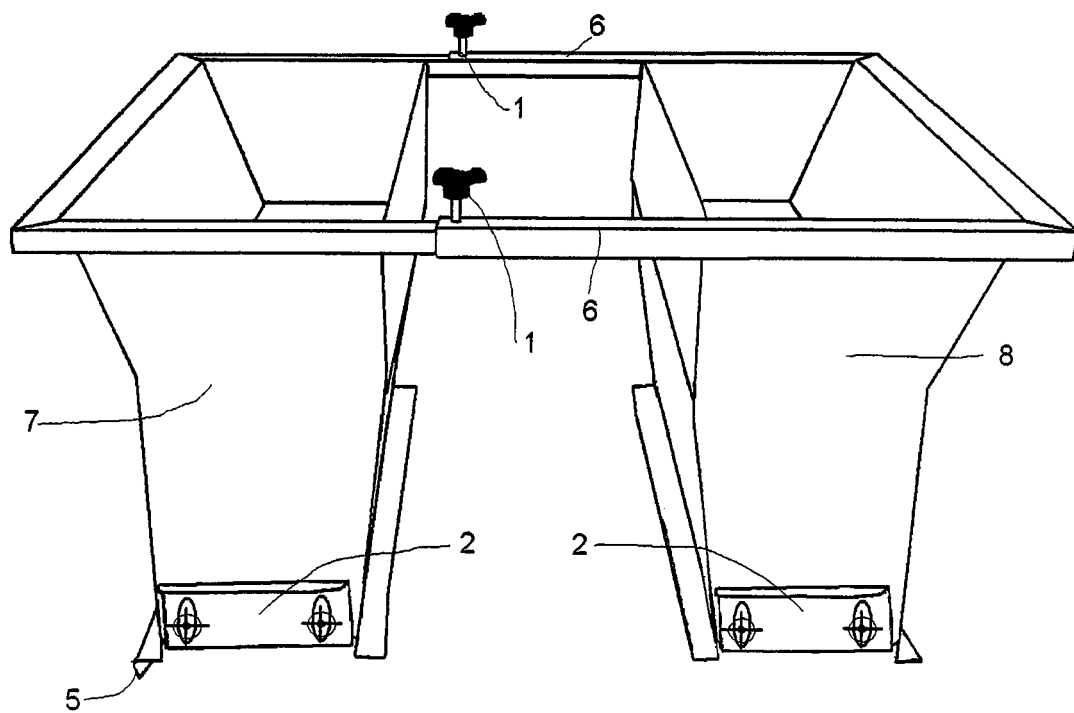


FIG.2

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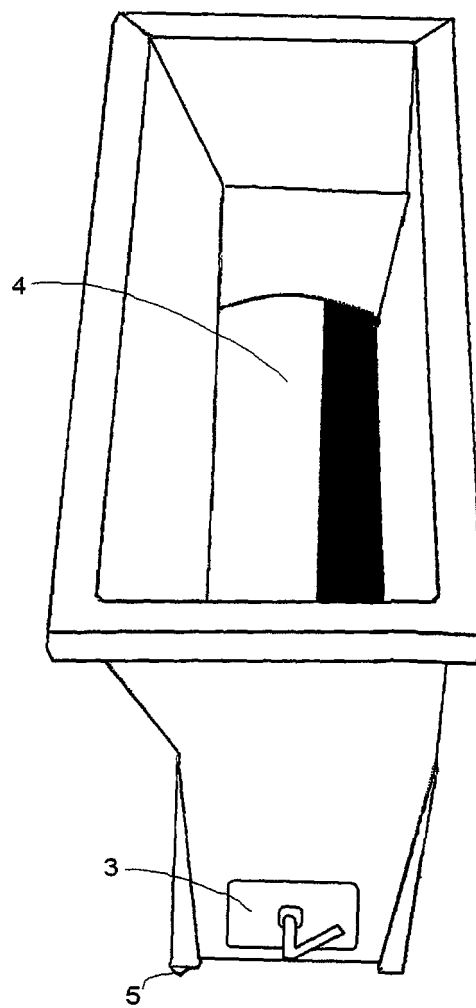


FIG.3

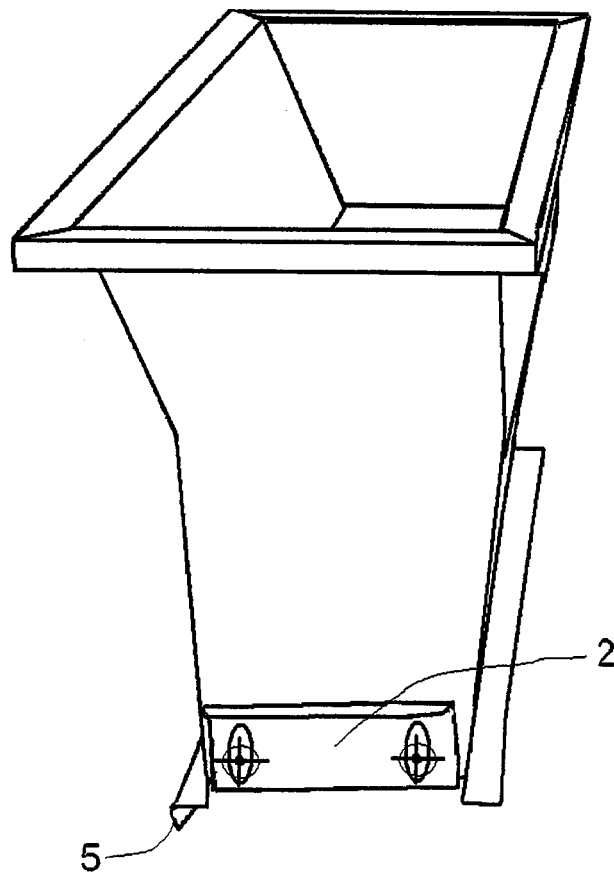


FIG.4