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(54) **A device for manufacturing a fence post of mouldable material, and fence post provided with a shoulder**

(57) A device for manufacturing a fence post of mouldable material and provided with a reinforcement (12), which device comprises at least a multipart mould (1) with infeed (5) and air release opening (6), wherein the mould (1) is embodied with a lost part (11) on a lon-

gitudinal partition plane thereof, which lost part (11) forms a part of the end product, whereby as fence post this product can easily be provided with fixing members, for instance for fence wire mesh, and which end product is light in weight and easy to place in the ground.

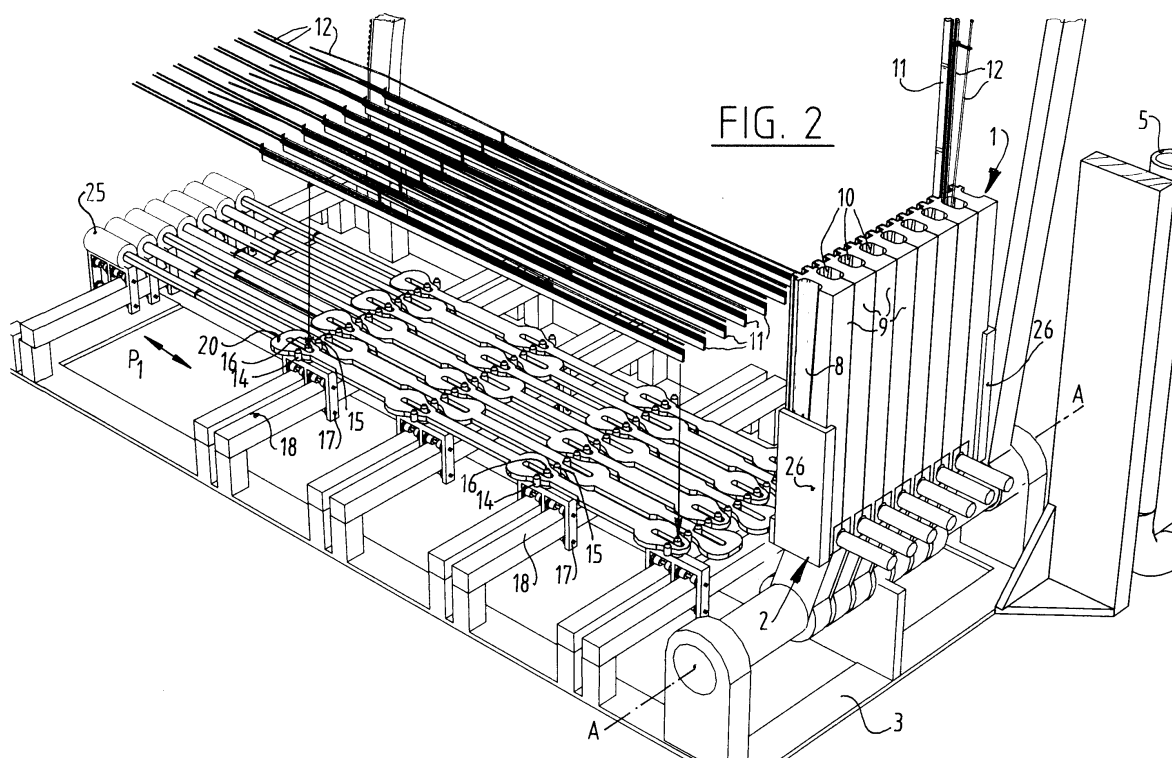


FIG. 2

Description

[0001] The invention relates to a device for manufacturing a fence post of mouldable material and provided with a reinforcement, which device comprises a multi-part mould with infeed and air release opening.

[0002] It is known to embody fence posts of the type described in the preamble in concrete. This concrete is strengthened by a particular reinforcement. This reinforcement can be internal or external, wherein on the post respectively on an external reinforcement means are arranged for mounting the intermediate sections of the fence, for instance wire mesh, gratings and the like. The drawback of such a post is that the moulds for forming of the post are relatively expensive and therefore complicate the production process, this being the consequence of having to position the desired reinforcement at the correct position during moulding. It is noted here that the posts must be relatively slender in order to keep the weight as low as possible in respect of handling thereof. The posts moreover have a tapering cross-section which narrows from a determined central plane toward the outer ends, which is advantageous for placing of the posts in the ground and the aesthetic appearance of that part situated above the ground.

[0003] The invention has for its object to provide a device for moulding fence posts, with which the production process can be considerably simplified, kept inexpensive, and which mould can be made from comparatively cheap material.

[0004] The device according to the invention is distinguished in that the mould is embodied with a lost part on a longitudinal partition plane thereof, which lost part forms a part of the end product.

[0005] Owing to the use of a lost part in the mould which also forms a part of the end product, it is possible to close the mould halves comparatively accurately if the lost part has a good sealing function. Due to this sealing function the mould itself can consist of a relatively easily mouldable mass, for instance concrete. The lost end part can also serve as support for the reinforcement in the final post, which reinforcement can thereby be positioned very accurately in the cavity of the mould.

[0006] The lost part is manufactured according to the invention from a plastic material such as rubber or the like, which also serves as basis for possible attaching means or mounting means for the fencing to be arranged on the posts, for instance wire mesh or gratings.

[0007] The invention further relates to a fence post per se, which is embodied according to the invention with a cross-section narrowing to the outside, starting from a transverse plane, which transverse plane will normally be situated at ground level.

[0008] In addition, the fence post according to the invention is characterized by a constriction which extends at least along the above-ground part of the post as far as said transverse plane.

[0009] The advantage hereof is not only an aestheti-

cally exceptional fence post but also a weight decrease as a result of dispensing with material, in addition to a shoulder at that transverse plane which can serve for arranging of a tool to arrange the post in the ground.

[0010] Above stated and other features of the invention will be further elucidated in the figure description hereinbelow of an embodiment of the device and the posts obtained therewith.

[0011] In the figures:

fig. 1 shows a perspective upright view of a moulding device for manufacturing concrete posts,

fig. 2 shows a view corresponding with fig. 1 of a part of the device of fig. 1 on enlarged scale and during arranging of the lost part with reinforcement supported thereby,

fig. 3 shows a view corresponding with fig. 2 of the device during another phase of the assembly of the device from the mould parts,

fig. 4 is a perspective view of a part of the moulding device as according to claim 1 on enlarged scale, fig. 5A, B and C show three upright views of the post reinforcement with lost part carrier, a front respectively rear view of the obtained post,

fig. 6 is a perspective view of the lower part of the post according to the invention provided with an auxiliary tool for arranging this post in the ground.

[0012] The device shown in fig. 1 consists of a number of, here eight, moulds 1 which are disposed mutually adjacently and held under pressure in a mould carrier 2 which is arranged pivotally on an axis A-A in a frame 3.

[0013] In figures 1 and 2 the moulds are placed in a vertical moulding position, i.e. their upper ends are placed mutually adjacently under a casting manifold 4, which casting manifold 4 is supplied by a feed conduit 5 for the moulding material, for instance concrete.

[0014] On the underside the moulds are embodied with an air release pipe 6 such that the mould cavity can be completely filled with the moulding material.

[0015] The mould cavity is shown in fig. 2 and is formed by a recess 8 in the full side wall of each mould half 9. The mould cavities 10 are created by placing two mould halves 9 against each other.

[0016] According to the invention a lost part of the mould is arranged which is designated 11 in fig. 1. Each lost part is an elongate rubber strip with a predetermined transverse profile, of sufficient rigidity and strength that it can be placed on an operating means 13, this being further elucidated below. Lost part 11 is eventually situated in the partition plane between each half mould part 9, as shown on the right in fig. 2. Each lost part 11 carries a reinforcement 12, which is further elucidated below. Reinforcement 12 ultimately comes to lie in mould cavity 10, see also fig. 2.

[0017] The moulding device according to the invention is characterized inter alia in that mould halves 9 can be moved simultaneously sideways along the axis A-A.

In fig. 2 they are shown against each other forming mould cavity 10, but prior to assembly the part-halves have to be moved apart. For this purpose each mould part 8 is laid on a row of pins 14, while the following is laid on a row of pins 15. The lost mould part, rubber strip 11, is placed on the intermediate pin 16. Reference is also made herein to the detail view of fig. 4. Pins 16 here form the central pins, while the rows of pins 14 respectively 15 undergo a relative sideways movement in relation thereto in order to spread mould halves 9 relative to mould strip 11.

[0018] Each row of pins is arranged on a carriage 17 movable sideways on rollers along supports 18. A control cam part 20 with lateral guide surfaces 21, see also fig. 4, co-acts with the rows of pins 14 respectively 15, wherein each profile part 20 also has a slotted hole 22 which receives one central pin 16. Control cams 20 can be moved in the direction of arrow P1 by means of a cylinder 25 or the like. Sliding of cam parts 20 in the direction of arrow P1, for instance to the right in fig. 2, will cause the rows of pins 14 to move outward relative to the central row of pins 16. Central pin 16 will herein also be moved sideways through pressing against the rows of pins 15. The relative movement of 14 and 15 is however the same in relation to the row of pins 16. By energizing all cylinders 25 in the same direction the rows of pins of one mould half at a time will be moved sideways, which can be seen in fig. 3. When profile parts 20 are retracted in the reverse direction the mould halves can be moved toward each other while enclosing the lost strip part 11 of the mould such that it is clamped between the mould halves, see on the right in fig. 2. This clamping can take place with the cheeks 26 of carrier 2 which can be moved towards each other by pressure means (not shown).

[0019] Returning to the starting situation of fig. 3, the device can be assembled as follows. By carrying one lost mould strip part 11 downward at a time and placing it on pins 16 and then placing the mould halves 9 with a groove-like recess 27 on the underside thereof onto the rows of pins 14 respectively 15 the device can be assembled and placed to form a configuration as shown at right rear in fig. 3.

[0020] With the above described pressing movement of the cheek halves 26 of carrier 2 the mould halves can be shifted to a situation as shown in fig. 4, wherein it can clearly be seen that the reinforcing rods 30 respectively 31 lie at the correct position in cavity 10 of the mould. The strip 11 is embodied for this purpose with reinforcement carriers 32 which are placed in advance on strips 11 in the position of fig. 3.

[0021] After being closed, the mould parts are carried from a horizontal assembly position to the vertical moulding position of fig. 1. Pouring of the mouldable material can then take place in the above described manner and, after curing thereof, the group of moulds can be returned in reverse sequence to the horizontal position and set down on operating means 13. By energizing cyl-

inders 25 the mould halves can be spread once again, this simultaneously on both sides of the obtained end product. A part of mould strip 11 protrudes out of the end product so that it is still situated on the central rows of pins 16. After removal of the end product according to fig. 5, the strip 11 protrudes outside the cross-section of the obtained post 35, which strip can be cut off by appropriate means. A strip part 11' is then left behind in the mould material of post 35, which strip part can serve for arranging of fixing screws in the per se hard concrete post. No additional drilling operations or the like need be performed.

[0022] Fig. 5 shows that in relation to plane B-B the post 35 tapers both upward and downward, wherein plane B-B is assumed to be situated roughly at ground level after placing of the post in the field.

[0023] Fig. 6 shows that the fence post, or at least the upper part, is embodied with a constriction 36 on both sides of post 35, which provides a weight reduction. The constriction runs as far as said cross-sectional plane B-B (see fig. 5), whereby a shoulder 37 is formed. This shoulder 37 can serve as supporting surface for an auxiliary device for inserting the post in the ground. This auxiliary device 40 consists of a base plate 41 on which each part of a clamp 43 is pivotally mounted via pivot pins 42. On the other side of pivot pin 42 a control arm 44 is fixed to each clamp part 43, the outer ends of these arms being mutually connected by a cylinder 45. By spreading arms 44 by means of cylinder 45 the clamp parts 43 will move toward each other, which parts have a profiled form on the inner side such that they can come to lie on shoulder 37. By arranging a hammer type vibrator or other random apparatus on base plate 41 or on one of the parts 43 of the clamp, a downward directed vibration force can be exerted on shoulder 37, and therefore on post 35, so that it is vibrated or driven into the ground.

[0024] The plate 41 is arranged slidably along a vertical guide 46 which can serve as temporary support for device 40. Guide 46 is placed on a footplate 47 extending round the foot part of post 35.

[0025] It is noted that mould parts 9 provided on both sides with mould recess 8 are all the same in terms of length and cross-section. These mould halves can be manufactured easily by means of a single master mould in which all moulds can be made from concrete or the like and a total moulding device can thus be manufactured in simple an inexpensive manner, which contributes toward a cheaper end product.

[0026] The invention is not limited to the above described embodiments. It will be apparent that within the scope of the invention any form of post can be applied. In the shown embodiment the lost strip 11 according to the invention runs only as far as the cross-section part B-B, but it will be apparent that it can also extend along the full length. The shown reinforcement consists here of three rods which are of differing length. This also depends on the desired form, strength and application of

the post.

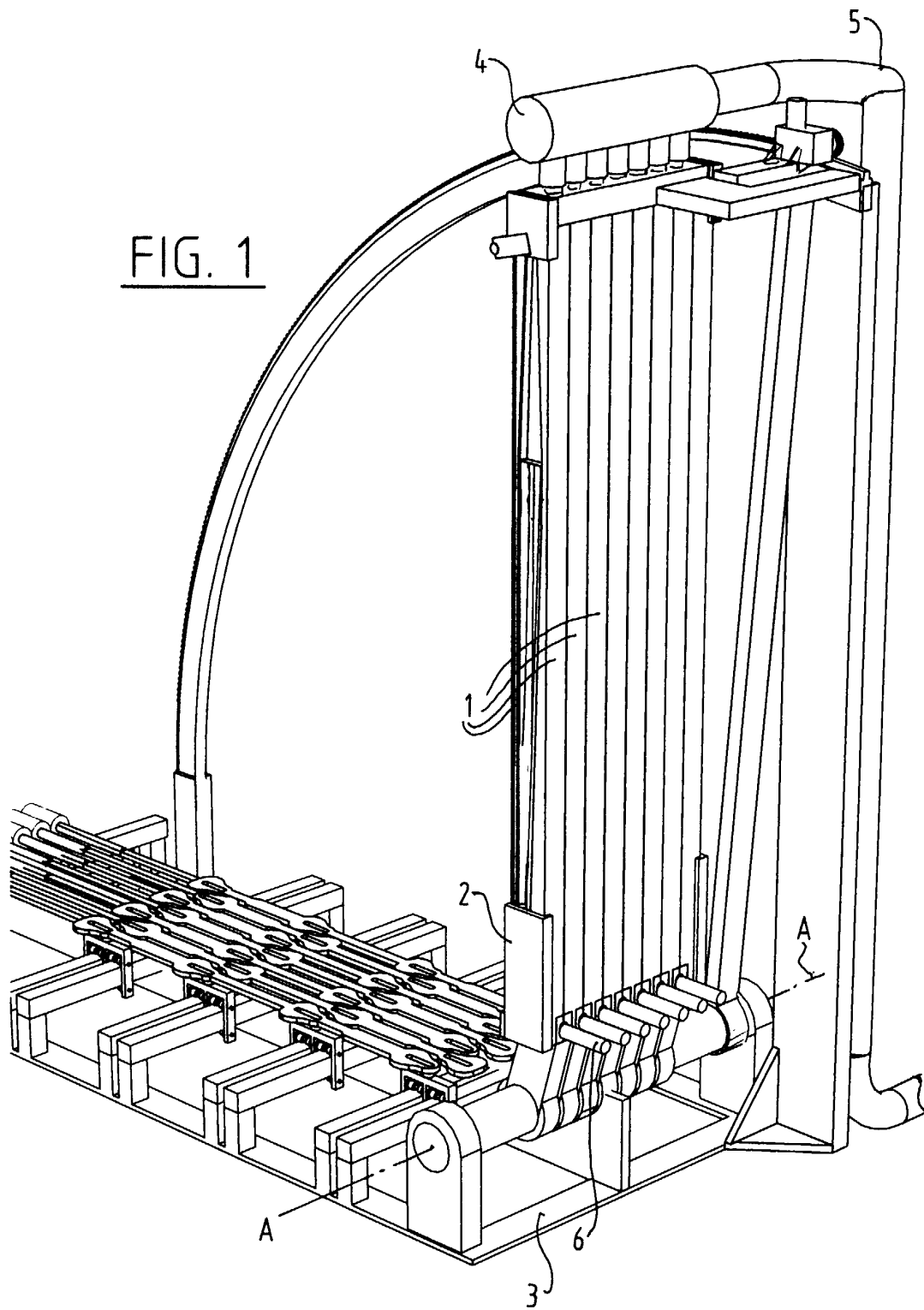
[0027] The method of arranging the mouldable material, such as concrete, in the moulds, i.e. under the influence of the force of gravity by introducing it into the mould from above, can be applied in random desired manner and otherwise falls outside the scope of the invention. A horizontal disposition of the moulds can be envisaged here, wherein the liquid concrete is injected under pressure.

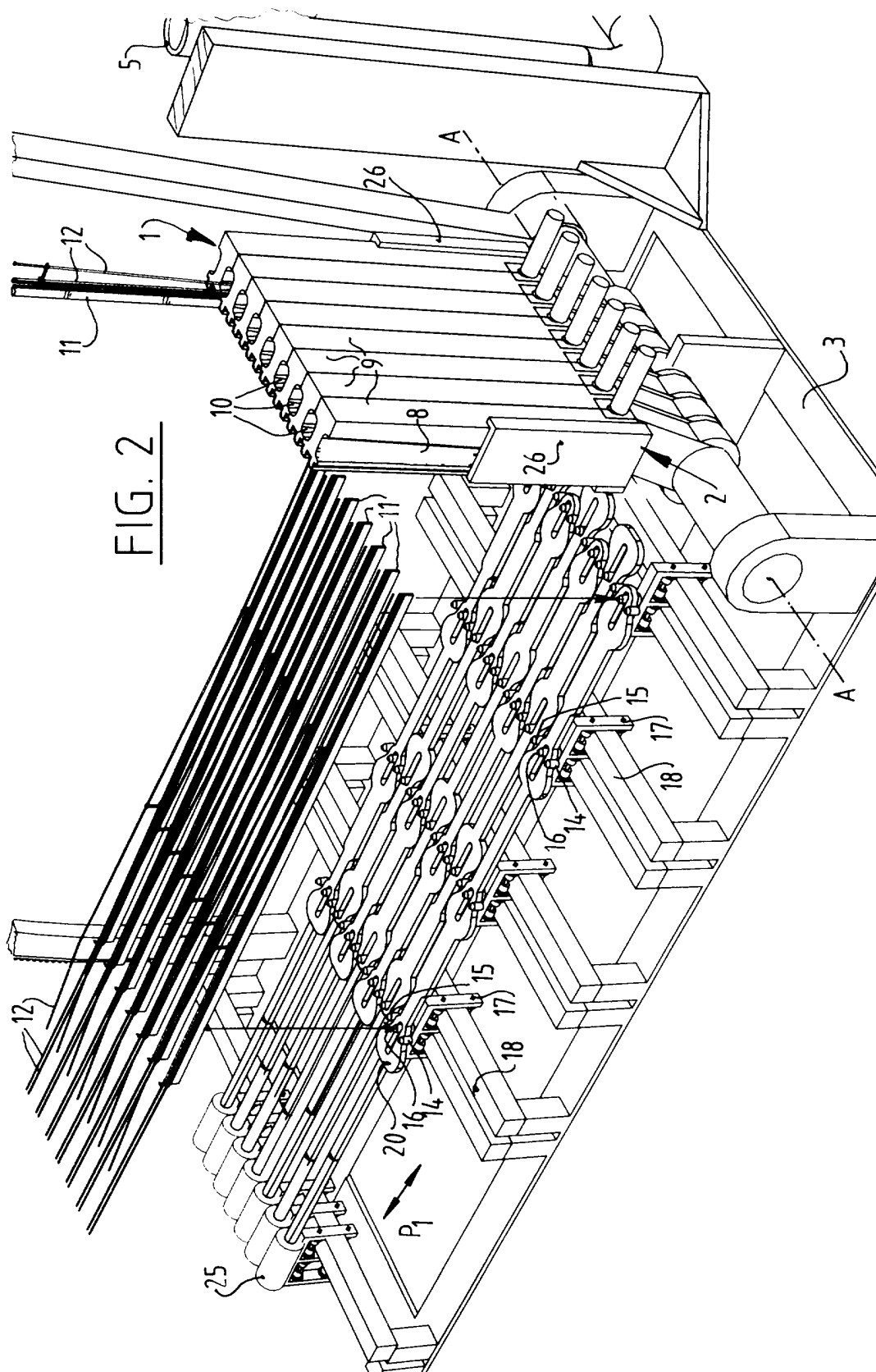
[0028] It is finally noted that each mould half part 8 forms both the left and right-hand side of a mould cavity 10. This can of course also be constructed from two elements.

[0029] In the case of particular cross-sectional forms it may be desired to apply more than two concrete mould halves or even a transverse partition, which will be situated at the height of the transverse plane B-B.

Claims

1. Device for manufacturing a fence post of mouldable material and provided with a reinforcement, which device comprises at least a multipart mould with in-feed and air release opening, **characterized in that** the mould is embodied with a lost part on a longitudinal partition plane thereof, which lost part forms a part of the end product.
2. Device as claimed in claim 1, **characterized in that** the lost part is provided with at least two carriers for temporary support of the reinforcement in the mould.
3. Device as claimed in claim 1 or 2, **characterized in that** the lost part is strip-like and extends over the partition plane of two mould halves.
4. Device as claimed in any of the foregoing claims, **characterized in that** pressure means are arranged for symmetrical separation of the mould halves relative to the lost part.
5. Device as claimed in claims 1-4, **characterized in that** a number of moulds are arranged mutually adjacently and supported on a frame for sliding in transverse direction.
6. Device as claimed in claims 1-5, **characterized in that** the mould or the group of moulds are pivotable from a lying assembly and release position to a standing moulding position, and vice versa.
7. Mould suitable for use in a device as claimed in any of the foregoing claims, **characterized in that** the mould is manufactured from a mouldable and curable material such as concrete.
8. Mould as claimed in claim 7, **characterized in that** the lost part is manufactured from a plastic material such as rubber and the like.
9. Post obtained with the device as claimed in any of the foregoing claims, **characterized in that** the reinforcement consists of two main rods on either side of the longitudinal partition plane formed by the lost mould part and a third main rod lying in that plane and at a distance from the lost mould part.
10. Post as claimed in claim 9 with a cross-section changing and becoming smaller toward the outside from a transverse plane, **characterized in that** the lost mould part extends on only one side of said transverse plane.
11. Post suitable for a fence, which post is manufactured from a curable and mouldable material, wherein the post has a cross-section becoming smaller toward both ends from a transverse plane.
12. Post as claimed in claim 11, **characterized in that** from said transverse plane the post has a constriction extending over at least a part thereof, preferably the above-ground part.
13. Post as claimed in claim 11, **characterized in that** the post is provided with a shoulder on or close to said transverse plane.





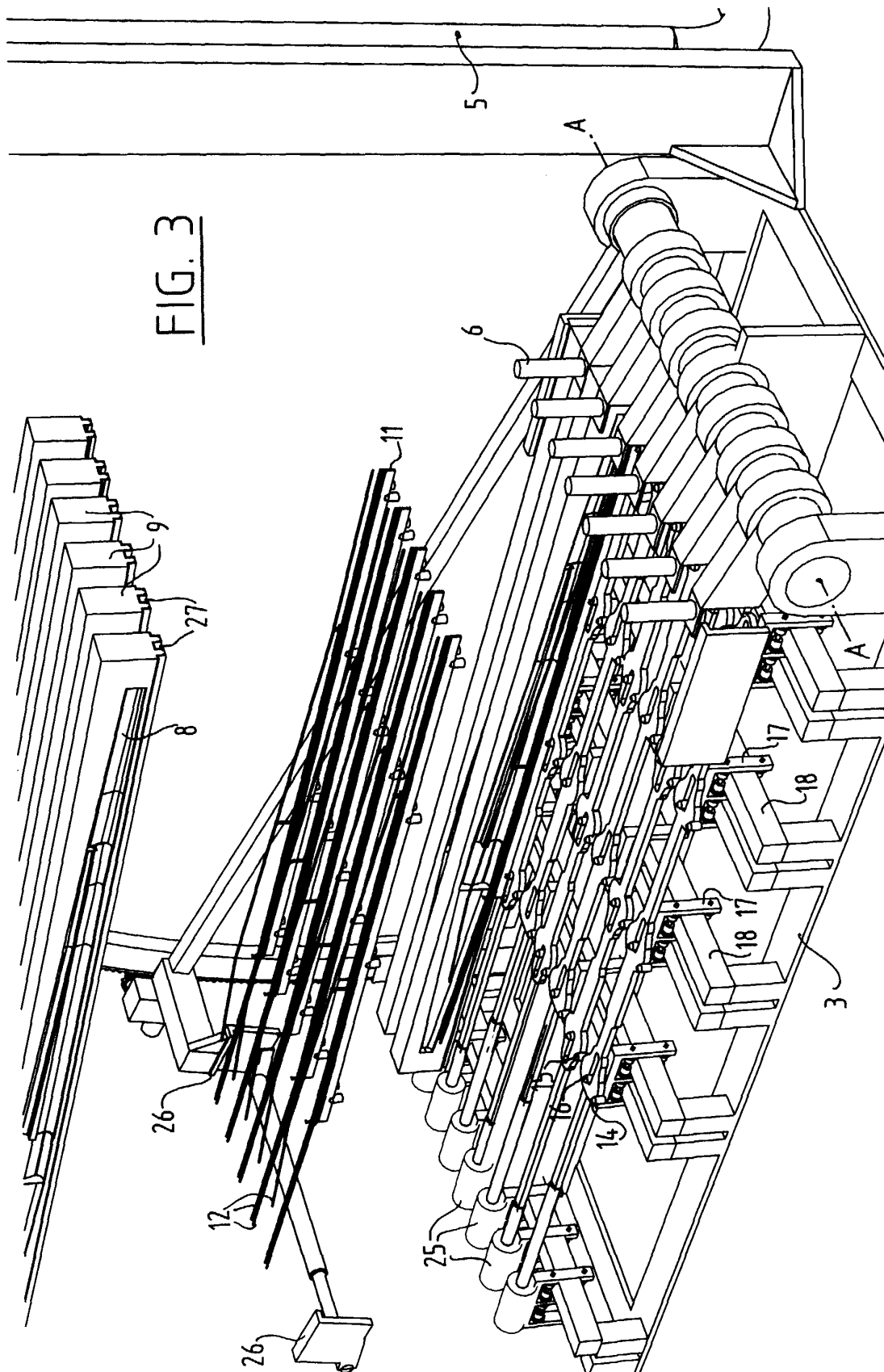


FIG. 4

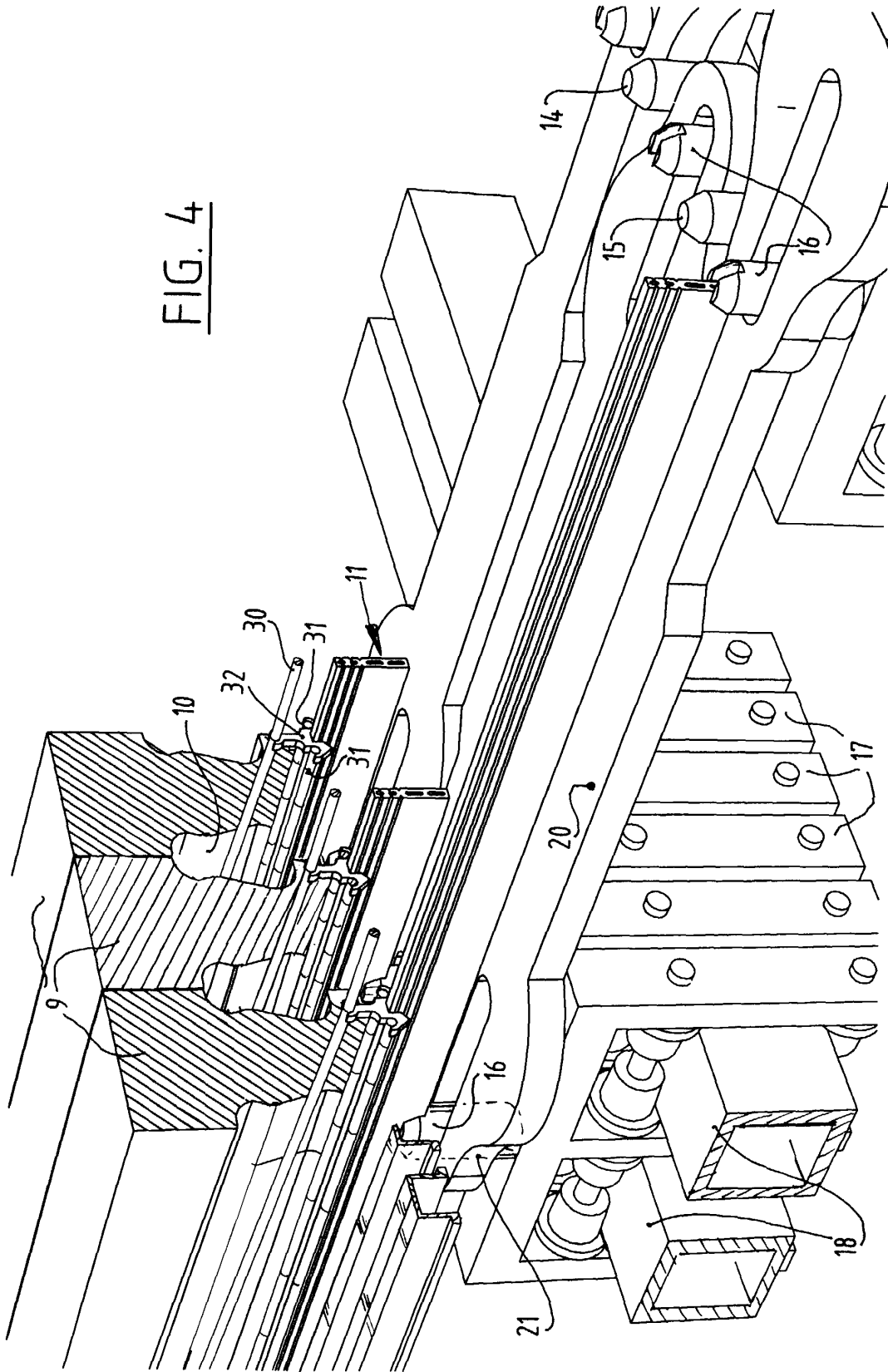


FIG. 5

