

Description

The present invention relates to a reinforcing rod holder for use in joining cast concrete work, comprising a hollow body in which are disposed the free, bent ends of the reinforcing rods which comprise a U-shaped anchoring portion, said ends converging in relation to the centre line of the hollow body, and also relates to a method of producing such a reinforcing rod holder. Such a reinforcing rod holder is known from Swiss Patent Specification No. 627 811. This reinforcing rod holder has the advantage that the reinforcing rods disposed therein are almost fully protected and that the holders can be easily transported. The portion of the holder at the wall end has equidistant transverse grooves formed therein, with markings for holes which are to be drilled subsequently. The U-shaped, bent shank ends of the reinforcing rods are hooked into these holes, whereupon a cover member is secured. It is relatively labour-intensive to hook-in the reinforcing rods, and the procedure cannot be automated or can only be automated with difficulty. Furthermore, precautions must be taken to secure the reinforcing rods in a quite specific position. In addition, the cover member is more an element which has to be injection-moulded, and it is difficult to seal the cover member completely.

Swiss Patent Specification No. 562 376 belonging to the same Applicant also discloses a reinforcing rod which largely comprises a prismatic body of expanded plastics material in which the reinforcing rods are moulded. It has been shown that, for a holder arrangement which is formed only from expanded plastics material and with the varied and ever-increasing application of this first reinforcing rod holder, it is desirable to improve, on the one hand, the complete removal of the body made of expanded plastics material and its stability and, on the other hand,

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the production of the reinforcing rod holder, and consequently it is the object of the present invention to provide a reinforcing rod holder which can be produced more economically and whereby all the component parts of the holder can be easily and fully removed. This object is achieved by a reinforcing rod holder which is described in the claims.

The invention will now be explained in fuller detail with reference to a drawing of one embodiment.

Fig. 1 is a plan view of the reinforcing rod holder according to the invention;

Fig. 2 is an enlarged detail of a longitudinal sectional view taken along the line II-II of Fig. 1;

Fig. 3 is an enlarged detail of a longitudinal sectional view taken along the line III-III of Fig. 1; and

Fig. 4 is a sectional view, on an enlarged scale, taken along the line IV-IV of Fig. 1.

Fig. 1 illustrates the hollow body 1, which is made of plastics material, and the reinforcing rods 2 which, in the present case, comprise a U-shaped anchoring portion; the rods are bent and their free ends 3 and 4 are convergent. The hollow body 1 is provided with apertures 5 through which the anchoring portion of the reinforcing rod is inserted from behind. These apertures 5 have holes 6 at their two ends for receiving the shanks of the reinforcing rods which are slightly narrower than the shanks, whereas the central portion of these apertures is formed from two overlapping flaps 7 which close the aperture very well again after the reinforcing rods have been inserted. In addition, these flaps secure the reinforcing rods at their corners.



It is apparent that support ribs 8 are also provided on the hollow body on both sides of the apertures 5, and the lowermost layer of the bent shanks of the reinforcing rods lies on the support ribs. In the present case, see Fig. 1, these are the first three reinforcing rods E1, E2 and E3 when viewed from the left-hand side. The other five reinforcing rods are inserted in the opposite direction, i.e. in Fig. 1 the free ends point towards the left-hand side. The bent shanks of the rods E4, E5 and E6, numbered from the left-hand side, rest on the bent shanks of the rods E1, E2 and E3, see also Fig. 2. To prevent the reinforcing rods E7 and E8 from tilting, two spacer ribs 9 and 10 are mounted between the last three apertures, and the bent shanks of the reinforcing rods E7 and E8 are supported on the spacer ribs.

As can be seen from Figs. 2 and 3 in particular, the bent ends together with the bend itself are disposed in the hollow body, thereby ensuring that, when the connecting rods are used, they can be bent-back completely in a straight line.

In contrast to the embodiment according to Swiss Patent Specification No. 627 811 and other similar embodiments, there is no cover member mounted on the hollow body, such a cover member sometimes being very complicated to produce, and there is a danger that concrete or fluid concrete will enter, whereby the reinforcing rods may rust, but the hollow body is filled with an expanded plastics material 11, Fig. 4. It can be seen that, with this simple solution, the hollow body 1 may be used as an injection-moulding, casting or pouring mould, thereby permitting the manufacture to be substantially simplified compared with the method claimed in Swiss Patent Specification No. 562 376, since a specific mould has to be produced and used there. It is advantageous for only so much

expanded plastics material to be applied over the shanks of the reinforcing rods that they are well covered, but they still shine-through to facilitate removal of the holder arrangement.

The straight component parts can be easily inserted through the apertures 5, and this insertion procedure is suitable for being semi-automated or fully automated, whilst the flaps 7 ensure that the rods remain in place. The subsequent injection-moulding with expanded plastics material is also a very simple procedure and can be accomplished very economically. By embedding the ends of the reinforcing rods, it is ensured that they do not rust. Polyurethane, for example, is a suitable expanded plastics material. In addition, it is also possible to use Styropor or any other suitable plastics material which can be injection-moulded, cast or poured.

When the rods are embedded in concrete, a temporary coating occasionally occurs on the wall, and this coating can adhere well to the expanded plastics material. It is advantageous, however, to ensure that the concrete cannot adhere well to the other component parts of the holder, and this can be achieved either by the selection of the plastics material or by spraying a suitable agent onto the external surface.

To fulfil their purpose, the bent ends of the reinforcing rods are exposed and bent straight, thereby causing a large portion of the expanded plastics material to be removed already. Subsequently, the hollow body which does not adhere well to the concrete is pulled-out by means of a suitable tool, so that the final remains of the expanded plastics material are also carried along therewith, and so that the reinforcing rods as well as the wall surface at the location where the hollow body was in abutment are



fully exposed. In order to facilitate this step of pulling-out the hollow body, the lateral edges 12 of the hollow body are slightly inclined outwardly towards the open end. It is also easy to see that both the support ribs 8 and the two spacer ribs 9 and 10 leave behind in the concrete wall an imprint which serves as an additional engaging means.

Instead of using a reinforcing rod with identical shanks, as described in this example, it is also conceivable to use reinforcing rods with only one shank and one anchoring portion. Instead of using a hollow body formed from plastics material, it is also possible to provide a hollow body formed from a thin metal foil.