

The object of the present invention is a box for the placing in readiness of reinforcements for connecting two adjacent concrete building parts poured one after the other.

This placing in readiness is usually effected by totally covering the reinforcement portions intended to be placed in the second building part, this covering being effected either by bedding these reinforcement portions in a friable material such as synthetic foam, which is then scraped away, or placing these same reinforcement portions in boxes having one or several parts (Cf. EP-O.055.321 and DE-3.222.375).

Document DE-3.222.375 in the name of DOLLEN, particularly concerns a box for the placing in readiness of reinforcements which is made in a single part.

As shown in Figure 1, which is a perspective view of a box 1 of this type, this latter is formed from a hollow profile provided with a longitudinal opening 2 on its face 3, or base, intended to be placed on the first building part side, notches 4 being provided along this opening for the passage of the free portions of the reinforcements housed within the box.

In this box, the edges 5,6 of the opening 2 have complementary shapes (groove and rib) so as to close the box after the reinforcements have been introduced and to prevent the concrete flowing thereinto.

After pouring the concrete, a special tool, which is engaged on the edges 7 of the box, has to be used to extract the box in a single part, the box opening in the region of its opening 2.

This necessitates that the closure ensured by the

edges 5,6 of the box should not be too resistant, which could lead to the inopportune opening thereof during handling or during pouring of the concrete.

Figure 2 shows, in transverse section, another box 10 of a type known under the commercial name "BREFER" and which is constituted by a base 11 having the shape of a U-shaped profile and a cover 12, both of plastic material. The cover 12 is welded to the base 11 after the introduction of the reinforcements.

After the concrete is poured, the cover 12 must first be detached from the base 11, which necessitates that the weld between the base 11 and the cover should not be too resistant; then the base must be removed, after opening out the reinforcements, in another operation.

These various boxes do not give complete satisfaction, particularly as regards their withdrawal, which often presents difficulties because they open more or less easily.

Figure 8 shows, in a perspective view, yet another type of box 30 known under the commercial name "COMAX" and which is constituted by a metal base 31 formed by a profile having a transverse section in the form of an omega and a cover 32 formed by a strip of plastics material, of which the edges 32a are turned back so as to catch behind the edges 33a of wings 31a on the base 31 in order to ensure the closure of the latter.

This cover 32 furthermore has two lines of small perforations 34 in the region of its edges in order to allow the box to be opened by tearing the cover along these lines 34, once the first building part is completed; the base 31 and the edges 32a of the cover

being left in the concrete.

In the case which is shown in Figure 9, and which presently occurs, when one of the edges 31a of the box 30 is in the immediate vicinity of an external face 35 of the concrete part, the region 36 of the building part comprised between the shuttering 37 and the edges 31a of the base 31 of the box will not correctly fill with concrete because of its small thickness and this being the case, moreover, during the concreting of the first building part as well as the concreting of the second building part.

This leads, on the one hand, to aesthetic defects in the external face 35 of the concrete building part and, on the other hand, to a risk of corrosion of the metal base 31 which, not being completely covered by the concrete, is poorly protected.

The object of the present invention is to remedy these disadvantages and to provide a box capable of being withdrawn easily once the pouring of the concrete has been effected, and in particular to provide a system of opening which can be adapted to any type of box.

This object is achieved by a box according to Claim 1.

During the extraction of the box, when a pull is exerted on the accessible portion of the box, the weakening line causes the rupture along the weakening line of the base of the box, which is retained by the turned back portions of the reinforcements, and the box can then be extracted in one piece whatever its shape.

This system can also be used for a box made in two pieces (base and cover) welded or adhered together, or in

a single piece with closure by complementary profiled edges either adhered or welded, and is thus particularly advantageous.

In all cases, this system avoids the difficulty of designing the closure of the box in such a manner that it can then reopen when desired, whilst being sufficiently resistant not to open inopportunately, for example during handling and pouring of the concrete.

This weakening line can advantageously be constituted by a localised decrease in the thickness of the material constituting the box.

It can also be constituted by a succession of small aligned holes, as well as by tear starts from the opening through which the reinforcements pass, these various embodiments being combinable with each other at will.

The invention will, in any case, be more clearly understood and other characteristic will be brought out with the aid of the description which follows, with reference to the accompanying schematic drawings, showing as non-limitative examples, several embodiments of the opening system of the invention:

Figure 3 is a detailed view, to an enlarged scale, of an example of weakening of a box;

Figure 4 is a view similar to that of Figure 3 showing another example of weakening of a box;

Figures 5, 6 and 7 are perspective views showing various boxes equipped with the opening system of the invention.

Figure 10 is a view in transverse section of a box in accordance with another embodiment of the invention.

Figure 11 is a detailed view, to an enlarged scale, of the box of Figure 10.

Figures 12 and 13 are similar views respectively to Figures 10 and 11 of a box in accordance with yet another embodiment of the invention.

As shown in Figure 3, the opening system of the invention is formed by a weakening of the material in the base 15 of a box, i.e. in the face thereof which is intended to be located at the side of the first building part, this weakening here being constituted by a decrease 16 in the thickness of the material constituting this base 15, along a line extending over the whole length of the box. In this example, the weakening line 16 extends along openings 18 formed in the base 15 of the box for the passage of the reinforcements.

Such a decrease in thickness can be very easily effected, since the boxes are usually made from plastics materials.

Slots 17 are also formed along the weakening line 16 to either side of each opening 18.

These slots 17 constitute rupture starts and facilitate the opening of the box by rupturing the material from which it is made along its weakening line 16.

In the example shown in Figure 4, the weakening of the material is constituted by a series of small spaced holes 20 disposed along a line 21 which also extends along the whole length of the base 15 of the box.

As previously, this line of holes 20 extends along openings 18 intended for the passage of the reinforcements.

It will easily be seen that this series of holes 20, as well as the line of decreased thickness 16, facilitates the opening of the base 15 of the box by rupturing along the weakening line thus constituted.

Figures 5 to 7 show different examples of application of the system of the invention to boxes of known type, which will all be designated by the same reference 25 in each of the drawings, and in which the same elements will be designated by the same reference numbers.

In the example shown in Figure 5, the box 25 has a series of small aligned holes 20, shown only as dots in this drawing, extending over the whole length of the box.

The line 21 of holes 20 extends along the openings 18 provided for the passage of the reinforcements, and rupture starts formed by slots 17 are provided on each side of the openings 18.

In the example of Figure 6, the box 25 has two series of parallel openings 18 for the passage of the reinforcements and is thus intended in particular for two-piece reinforcements. In this case, the weakening line 16 (which is shown in dots in this figure) is formed by a decrease in thickness of the material, and extends between the two series of passage openings 18.

The rupture starts may also then be constituted by slots 19 extending transversely to the longitudinal direction of the box and connecting together two openings

18 located on parallel lines.

Slots 17 extending along the weakening line 16 may also be provided at the junction of this latter and the slots 19, to constitute other additional rupture starts.

In the example shown in Figure 7, the box 25 also has two parallel series of openings 18, but in this case, two weakening lines 21 constituted by a series of holes 20 are provided, each weakening line extending along a series of openings 18.

In this case, the longitudinal slots 17, to either side of each opening 18, are sufficient to constitute rupture starts.

In the exemplary embodiment shown in Figures 10 and 11, the box 40 includes a base 41 constituted by a simple metal plate and a cover 42 constituted by an open profile of plastics material having a trapezoidal transverse section.

This cover 42 can also be made of plastics material by heat-shaping or any other means.

The end of each of the wings of the cover 42 has a return 43 extending longitudinally and adapted to be placed on each of the edges of the base 1 to ensure the closure of the assembly.

As Figure 11 more particularly shows, at the junction between each return 43 and the wing 42a of the corresponding profile, a weakening line 45 is formed constituted in the present case by a thinning of the wall of the profile, but which may also be constituted by a line of small perforations as previously explained.

The opening of the box 40, once the first building part is finished, is then effected in the region of the base 41 thereof, by tearing the cover 42 along the weakening lines 45. Only the base 41 thus remains bedded in the concrete building part.

As a result, any risk of corrosion of the metal base 40, as in the case of the "COMAX" box, is thus removed, since the wings 42a of the cover are removed with the whole lid and consequently do not impede the pouring of the second fixing portion, and the concrete no longer has a defective region.

Figures 12 and 13 show another type of box 50 similar to the box 40 and having, the same as the latter, a base 51 formed by a simple metal plate, and a cover 52 constituted by a profile or the like of plastics material, having, at the end of each of its wings, a return 53 delimiting a groove adapted to be placed on each of the edges of the base 51 to ensure its connection to the cover 52.

The only difference between these two boxes rests in the shape of the cover 52, which, in transverse section, essentially has the shape of a U with two lateral "skirts" 54, each skirt diverging from the edge of each wing 52a as far as beyond the base of the cover 52.

In this case too, a weakening line 55 is formed in the region of the base 51 of the box 50 and, more precisely, in the area of the junction of the returns 53 and the wings 52a, in order to permit the opening of the box by tearing the lid 52 in the region of the base 51 of the box.

The various ways of weakening described in the foregoing may, of course, be combined with each other, for example a line of material of less thickness may be combined with a line of holes.



CLAIMS

1. A box for the placing in readiness of reinforcements for connecting two concrete building parts, characterised in that it includes at least one weakening line (16, 21, 45, 55) which extends longitudinally over the face of the box intended to be located on the first building part side and connects together a series of openings (18) for the passage of the reinforcements or a series of slots (19) communicating with these openings.
2. A box according to Claim 1, characterised in that each weakening line (16) is constituted by a decrease in the thickness of the material of the face (15) of the box.
3. A box according to Claim 1, characterised in that each weakening line (21) is constituted by a succession of small holes (20) aligned and arranged as a broken line.
4. A box according to any one of Claims 1 to 3, characterised in that, when it comprises at least two series of aligned openings (18) for the passage of the reinforcements, each weakening line (16, 21) connects together the holes (18) of a series and slots (17) constituting rupture starts are provided on each weakening line (16, 21) to either side of each opening (18).
5. A box according to Claim 4, characterised in that a slot (19), constituting a rupture start and extending transversely of the box, connects two openings (18) of two separate series of openings.
6. A box according to Claim 5, characterised in that a slot (17) constituting a rupture start is also provided along the weakening line (16, 21) in the region of the junction of the latter with the slot (19).