A method for the concealed laying of ducting for electrical wiring systems in buildings involves the laying, directly onto a wall (1) to be plastered, of a ducting (4) having a thickness or relief less than the layer of rendering or plaster (3) intended to cover said wall, so as to be able to be contained in said layer. The method can also be applied to ready plastered walls of buildings, with the additional step of preliminary removal of the rendering (3) over a width sufficient to introduce a ducting (4). The ducting (4) is of the flexible type, consisting of at least one tubular element (5) for containing one or more cables (6), and has a relief, relative to the wall (1) on which it is mounted, of less than 10 mm. At least one tubular element (5) is already provided internally with one or more cables (6) at the time of laying so as to allow simultaneous laying of ducting (4) and cables (6).
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METHOD FOR LAYING DUCTING AND CABLES FOR ELECTRICAL, TELEPHONE AND/OR TELEVISION WIRING SYSTEMS IN BUILDINGS, AND ASSOCIATED DUCTING

DESCRIPTION

The present invention relates to a method for laying ducting and cables for electrical, telephone and/or television wiring systems in buildings, and a flexible ducting.

In new or renovated residential buildings it is often necessary to lay ducting for housing electrical, telephone and/or television cables.

According to the known art, a builder is required to carry out chasework in the bricks of the wall in order to form recesses housing the switching boxes and create channels in which so-called conduits can be laid and walled-up, said conduits being flexible tubular elements of the corrugated type with a circular cross-section and diameter of about 15-30 mm which are wound on reels and inside which, after laying, cables are inserted by an electrician.

This procedure, which involves the laying of cables in chases with breakage of the brickwork, is used for installation of electrical wiring systems both in newly constructed buildings and in old buildings where the
electrical system needs to be modified.

The aforementioned technique, however, has numerous drawbacks.

A first drawback consists in the notable use of labour for carrying out the chasework and also for subsequent insertion of the cables inside the tubular cable ducts, with consequent lengthy execution times and high costs. In fact, in order to insert the cables, cords are used and must be inserted into the tubular cable ducts so as to pull the attached cables along the path of the cable ducts.

A further drawback consists in the fact that several cables are inserted into each cable duct or conduit in close contact with each other and therefore in poor safety conditions in the event of overheating. Moreover, in the case where it is required to bore through the wall with a drill in order to insert wall-plugs for example, short-circuits may be caused if the drill bit penetrates the aforementioned cables.

According to another known technique, on the other hand, the cables are inserted into rigid plastic cable ducts which are mounted on the outside of the walls, normally as a bottom skirting with a thickness of about 20 mm and projecting from the wall. This latter solution, however, is aesthetically unpleasing and is a reserve solution
used when, for various reasons, it is not possible to carry out chasework in the walls.

A further drawback consists in the fact that the surface-laying of said rigid cable ducts does not allow furniture and wardrobes to be moved up against the wall.

An object of the present invention is to eliminate the aforementioned drawbacks and provide a method for the concealed laying of ducting and cables which can be applied both to recently constructed buildings and buildings which are to be renovated or modified, allowing savings in terms of labour, time and laying costs.

A further object is that of allowing laying to be carried out in an extremely simple manner using equipment which is simpler than that of conventional methods.

Said objects are fully achieved by the method forming the subject of the present invention, which is characterized by the contents of the claims indicated below and in particular by the fact that, in the case of buildings to be renovated or modified, it involves the steps of: removing the rendering or plaster over a sufficient width to introduce a ducting; laying the ducting having a thickness (or relief relative to the wall) less than the layer of rendering or plaster removed; re-covering with rendering or plaster.

In the case of laying on walls which are to be
subsequently plastered, said method involves laying, directly onto the brickwork wall, a ducting having a thickness (or relief relative to the wall) less than that of the rendering or plaster intended to re-cover said wall subsequently.

These and other characteristic features will emerge more clearly from the following detailed description of some preferred embodiments illustrated, purely by way of a non-limiting example, in the accompanying illustrative plate, in which:

- Figures 1 and 4 show a perspective view of the ducting;
- Figure 2 shows, in cross-section, a wall with the ducting according to Figure 1 applied to it;
- Figure 3 shows a cross-sectional view of a ducting according to a variation of embodiment.

With reference to the figures, 1 denotes in schematic form a brick wall 2 covered by a layer of rendering or plaster 3 about 15 mm thick according to the known art. 4 denotes a ducting consisting of a plurality of tubular elements 5 each of which contains a cable 6.

The tubular elements 5 are joined together by means of a common base 7 to which they are fixed or into which they are incorporated at the time of formation of said ducting.

The ducting 4 is made of electrically insulating plastic
material which is flexible so that it can be wound onto a reel in the manner of conventional cable ducts formed with a corrugated tube of circular cross-section.

The ducting 4 may comprise one or more tubular elements 5 each of which already containing one or more cables at the time of laying, but one or more tubular elements 5 may be empty, so as to allow the possibility of insertion of the cables after laying of the ducting.

The overall thickness of the ducting 4, formed by the base 7 and the tubular elements 5, is less than 10 mm so that the ducting can be applied inside a layer of rendering 3. Preferably said thickness is comprised between 6 and 8 mm so as to allow re-covering with a thick enough layer of rendering. The tubular elements 5 of the ducting 4 are parallel with one another and between the various tubular elements there are weakening zones which are formed for example with holes 8, in the example illustrated in Figure 1, or by means of incisions 9, in the example according to Figure 3, and which have the purpose of facilitating separation of one or more tubular elements from the ducting in the case where a smaller number of tubular elements is required. The base 7 may consist of a meshwork structure (Figure 4), a solid band or simple bridge-pieces or arms connecting together the tubular elements. The base 7 with the weakening
zones form means for connecting together the tubular elements 5.

The tubular elements 5 have a cross-section of substantially oval shape, as illustrated in Figure 1, but according to a variation illustrated in Figure 3, said tubular elements may have a flat bottom directly formed by the base 7.

The method forming the subject of the present invention can be applied both to newly constructed buildings and old buildings in which the electrical, telephone or television wiring system which is to be renovated or modified.

When used in old buildings and therefore on walls which are already finished and plastered, the method involves removal of the rendering or plaster 3 over a sufficient width to introduce a ducting 4; subsequent laying of the ducting having a thickness (or relief relative to the wall) less than the layer of rendering or plaster removed; final re-covering of the ducting 4 with rendering or plaster, until level with the surrounding rendering.

In the case of laying in newly constructed buildings on walls which are not yet plastered, the method involves laying, directly onto the brick wall, of a ducting with a thickness (or relief relative to the wall) less than
that of the rendering or plaster intended to re-cover
said wall subsequently.

The application of the ducting, in both the cases
described above, is performed with mortar or with bonding
agents, or laying may be performed without additional
binders if a particular self-adhesive ducting is used.

In this latter case it is sufficient to remove a bottom
protective film from the ducting and apply the ducting
onto the wall with slight pressure.

Spreading with mortar or with bonding agents, at least in
some zones, nevertheless helps to ensure greater gripping
strength.

The method and the ducting forming the subject of the
present invention allow considerable savings in the cost
of installation of electrical, telephone or television
wiring systems in the buildings, both because they avoid
extensive breaking-up work and because they allow the
ducts and cables to be laid simultaneously, since the
cables are already housed in the ducting at the time of
laying.

This is made possible by that fact that said ducting is
of the flexible type and can be wound onto reels together
with the cables contained in said ducting.

Breakage of the masonrywork is limited to the rooms where
the switching boxes are to be inserted and to the corners
of the walls in which the ducting must normally perform a bend through 90° which it is difficult to achieve only in the thickness of the rendering.

A further advantage of the present invention consists in the fact that, in the case of insertion of a single cable inside each tubular element, possible short-circuits due to overheating or any accidental cutting of pairs of cables are avoided.
CLAIMS

1. Method for the concealed laying of ducting for electrical, telephone and/or television wiring systems, in walls which are already finished and plastered, characterized in that it involves the following steps:
   - removing the rendering or plaster over a sufficient width to introduce a ducting;
   - laying the ducting having a thickness (or relief relative to the wall) less than the layer of rendering or plaster removed;
   - re-covering with rendering or plaster.

2. Method for laying ducting for electrical, telephone and television wiring systems in buildings, on walls which are to be subsequently plastered, characterized in that it involves the laying, directly onto the brick wall, of a ducting having a thickness (or relief relative to the wall) less than that of the rendering or plaster intended to re-cover said wall subsequently.

3. Method according to Claim 1 or 2, in which said ducting already comprises inside it the electrical, telephone and/or television cables so that, with laying of the ducting, there is also simultaneous laying of the cables.

4. Method according to Claim 1 or 2, in which laying of the ducting is performed by means of use of a ducting having at least a self-adhesive portion.
5. Method according to Claim 1 or 2, in which laying of the ducting is performed by means of application of binder material.

6. Flexible ducting for electrical, telephone and/or television wiring systems in buildings, of the type consisting of at least one tubular element (5) for containing one or more cables (6), characterized in that it has a thickness, or a relief relative to the wall (1) onto which it is applied, of less than 10 mm.

7. Ducting according to Claim 6, in which at least one tubular element (5) is already provided internally with one or more cables (6) at the time of laying.

8. Ducting according to Claim 6, characterized in that it comprises a plurality of tubular elements (5) which are parallel with one another and connected together by connection means (7, 8) formed so as to allow separation of one or more tubular elements (5) from the other tubular elements (5).

9. Ducting according to Claim 8, in which said connecting means comprise a base meshwork provided with weakening zones (8) for separation of one or more tubular elements (8), each of which with its own meshwork portion.

10. Ducting according to Claim 8, in which said connecting means comprise a connection base (7) of the solid type or formed by means of a plurality of connection arms.
11. Ducting according to Claim 6, in which each tubular element (5) contains a single cable (6) and is isolated from the other tubular elements (5).

12. Ducting according to Claim 6, in which said ducting (4) is a flexible strip and can be wound in the manner of a tape so as to form a reel.

13. Ducting according to Claim 6, in which the ducting (4) is provided with a self-adhesive base (7) formed by means of application of an adhesive substance protected by a film.

14. Electrical, telephone or television wiring system, characterized in that it comprises at least one ducting in accordance with any one of Claims 5 to 13 or that is formed with a method according to any one of Claims 1 to 5.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6  H02G3/26  H02G3/28

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
IPC 6  H02G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of database and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>GB 2 243 181 A (BYRNE JOHN MICHAEL ; SHEARD JAMES MICHAEL (GB)) 23 October 1991 see page 1, paragraph 1 - paragraph 2 see page 3, last paragraph; figures 1,2</td>
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A Patent family members are listed in annex.

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Date of the actual completion of the international search 15 June 1998

Date of mailing of the international search report 25/06/1998

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Authorized officer Moueza, A

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see page 1, line 25 - line 28  
see page 2, line 16 - line 25  
see page 4, line 2 - line 11 | 6, 7, 12-14          |
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