Sept. 27, 1960 S. BOLEF ET AL 2,954,419

WALL PANELS WITH ELECTRIC JUNCTION BOX

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FIG. 1

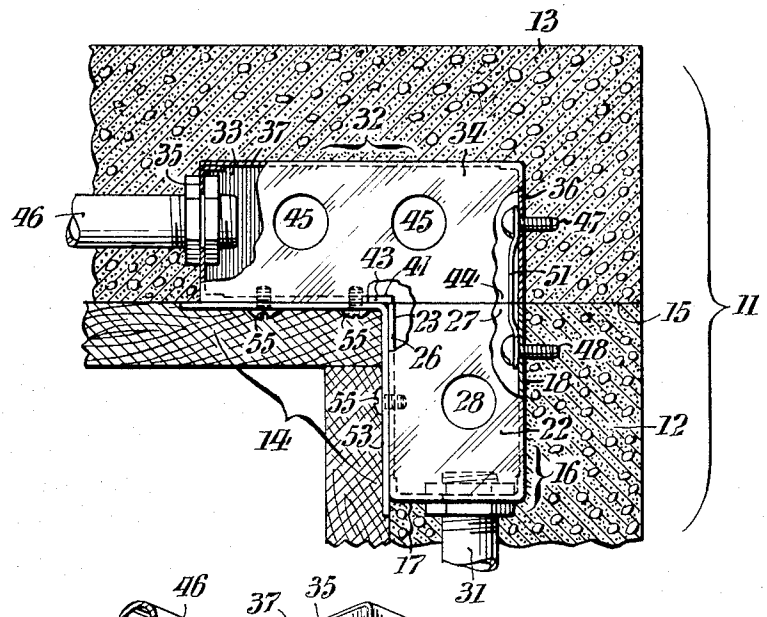


FIG. 3

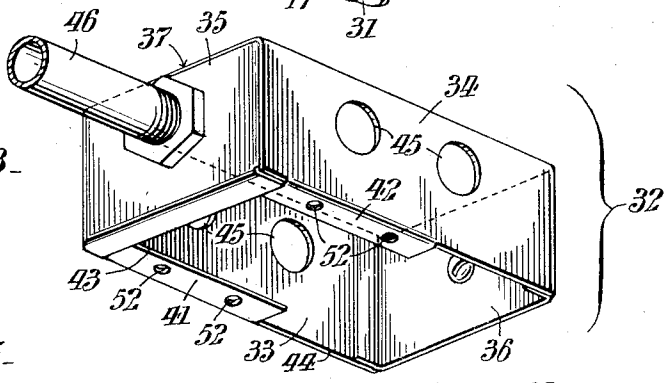


FIG. 5

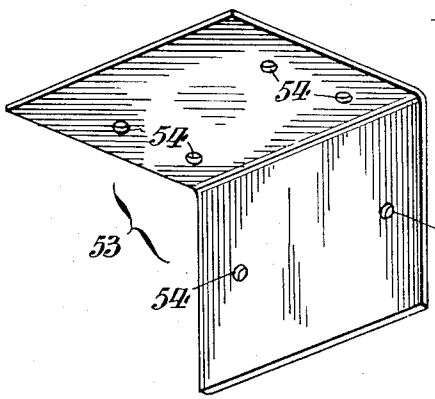
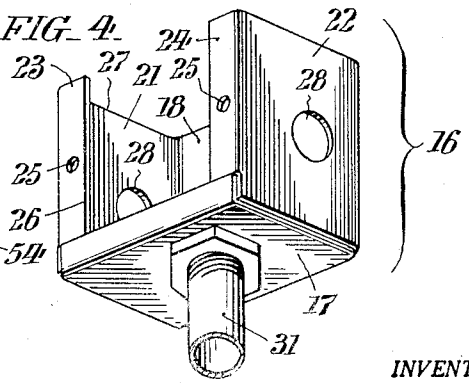


FIG. 4



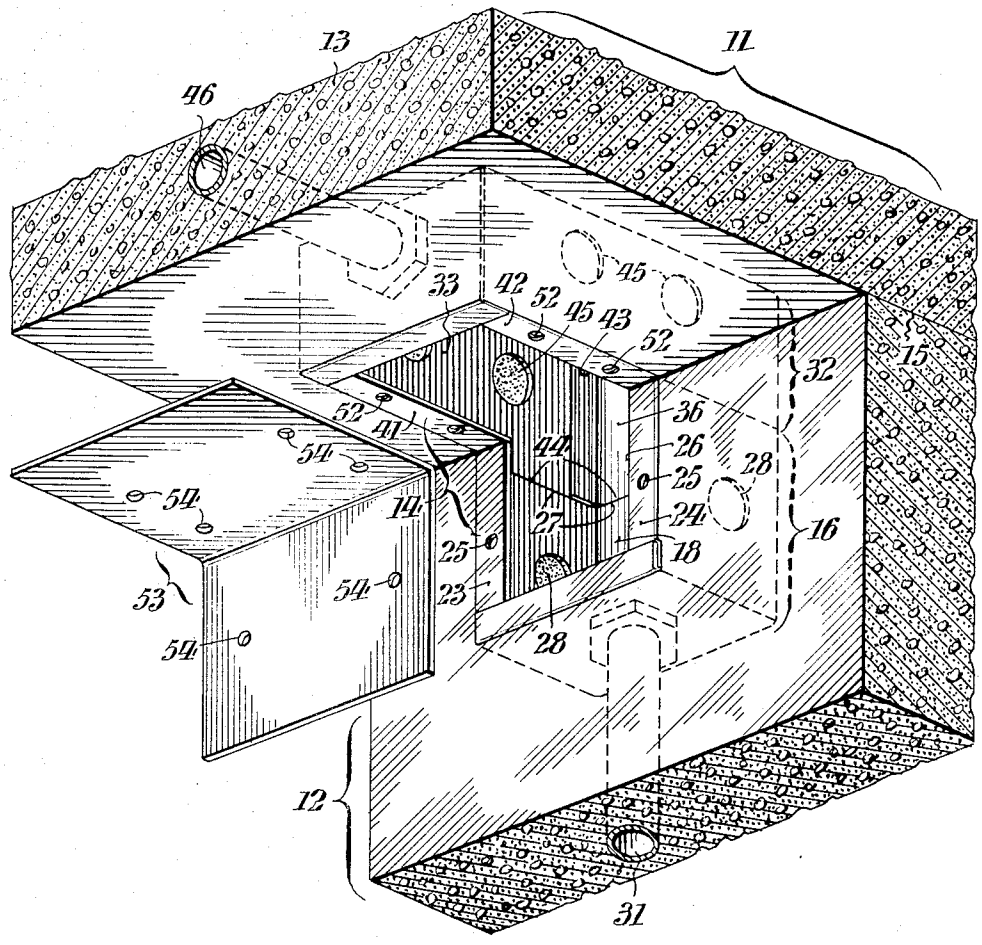
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WALL PANELS WITH ELECTRIC JUNCTION BOX

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FIG_2_



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WALL PANELS WITH ELECTRIC JUNCTION BOX

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5 Claims. (Cl. 174—48)

This invention relates to improvements in a method of constructing a building, and to the elements of a prefabricated building structure. More particularly, this invention relates to pre-cast concrete wall and ceiling panels having embedded therein an electrical junction box unit, and to the electrical junction box unit for use with the pre-cast concrete panels.

It has heretofore been desired to use pre-cast concrete panels in the construction of buildings such as office buildings, Navy and Army barracks and officer's quarters, and other such building construction. Use of such pre-cast concrete panels, however, has presented difficulties in making provision for the electrical circuits. Attempted solutions to the problems presented have been by haphazard means and none of these means have been entirely successful. In some cases holes were dug in the erected panels and a flexible connection of some sort was made between the wires which were run through the wall panels and the wires which were run through the ceiling panels. These procedures gave the structure an unsatisfactory appearance since patching of the holes in the concrete was required. Moreover, such patching or grouting of the concrete was also expensive.

It is an object of this invention to overcome the aforementioned difficulties and problems.

It is an object of this invention to provide a method of quickly and efficiently constructing a building.

It is another object to provide pre-cast wall and ceiling panels having provision made therein for electrical wiring. It is another object to provide such panels which are attractive in appearance and which require no grouting or patching of the concrete.

It is another object to provide electrical junction box units for pre-cast concrete wall and ceiling panels, which units are universal and can be positioned to conform to the plans and specifications of the building under construction.

It is another object to allow leeway for considerable misalignment of the elements of the electrical junction box unit with respect to each other, without interfering with the effectiveness or efficiency of the assembled unit.

It is another object to allow for the threading of electrical wiring through pre-cast concrete panels and to provide for efficiently connecting the wiring of one panel to the wiring of another.

Other objects and advantages of this invention, including its simplicity and economy, will further become apparent hereinafter and in the drawings, in which:

Fig. 1 is a fragmentary view in vertical section of a prefabricated building structure constructed in accordance with this invention;

Fig. 2 is a fragmentary view in perspective of the prefabricated building structure of this invention;

Fig. 3 is a view in perspective of a ceiling junction box constructed in accordance with the invention;

Fig. 4 is a view in perspective of a wall junction box constructed in accordance with the invention; and

Fig. 5 is a view in perspective of the cover plate element of the invention.

In describing the preferred embodiment of the invention illustrated in the drawings, specific terminology will be resorted to for the sake of clarity. However, it is not intended to be limited to the specific terms so selected, and it is to be understood that each specific term includes all technical equivalents which operate in a similar manner to accomplish a similar purpose.

Turning now to the specific embodiment of the invention selected for illustration in the drawings, the number **11** indicates generally a prefabricated building structure including a vertically positioned pre-cast concrete wall panel **12**, a pre-cast concrete ceiling panel **13** which is supported by wall panel **12**, and a junction box unit generally designated by the number **14**.

Wall panel **12** is of considerable size and forms a portion of the wall of the building under construction. It is cast either at the factory or at a convenient location on the site of the building construction. In either case the upper edge **15** of wall panel **12** has imbedded therein a wall junction box **16** which is preferably made of metal. If desired, the lower edge (not shown) of wall panel **12** is similarly provided with a wall junction box.

Wall junction box **16** includes a bottom **17**, a rear wall **18**, two side walls **21**, **22**, and a pair of flanges **23**, **24** extending inwardly from the edges of side walls **21**, **22**. Flanges **23**, **24** are provided with tapped holes **25**, and flanges **23**, **24** together with bottom **17** define an access opening **26** in wall junction box **16**. The upper edges of side walls **21**, **22** and rear wall **18** define a horizontal register opening **27**. Side walls **21**, **22** are provided with knockouts **28**. A conduit **31** extends from junction box **16** through bottom **17**, and electrical wiring is passed through conduit **31** to wall junction box **16**.

Ceiling panel **13** has imbedded therein a ceiling junction box **32** which is cast in the concrete in the same manner as was wall junction box **16**. Ceiling junction box **32** is made preferably of metal and includes side walls **33**, **34**, end walls **35**, **36**, and top wall **37**. Extending inwardly along a portion of the edges of side walls **33**, **34** are flanges **41**, **42** which are provided with tapped holes **52**. The edges of end walls **35**, **36** and side walls **33**, **34** define a horizontal opening including an access portion **43** defined by end wall **35** and flanges **41**, **42**, and a register portion **44**. Side walls **33**, **34** are provided with knockouts **45**. A conduit **46** extends from ceiling junction box **32** through end wall **35**, and electrical wiring is passed through conduit **46** to ceiling junction box **32**.

Junction box unit **14** also includes bonding screw **47** which is screwed into a tapped hole in ceiling junction box **32**, and bonding screw **48** which is screwed into a tapped hole in wall junction box **16**. Bonding wire **51** extends between bonding screws **47**, **48** which hold wire **51** in place. Screws **47**, **48** and wire **51** electrically connect ceiling junction box **32** to wall junction box **16**.

Junction box unit **14** also includes a cover plate **53** which is large enough to completely cover access opening **26** of wall junction box **16** and access portion **43** of ceiling junction box **32** even when these junction boxes are considerably misaligned, that is, when register portion **44** of ceiling junction box **32** is not in complete register with register opening **27** of wall junction box **16**. Cover plate **53** is supplied without holes and holes **54** are punched in it after wall panel **12** and ceiling panel **13** have been erected. The holes **54** are punched so that they register with holes **52** and **25** of the flanges **41**, **42**, **23**, **24**. The holes **54** in cover plate **53** are thus tailored to each junction box unit **14**, and the plate is affixed to junction box unit **14** by screws **55**.

The process of constructing a building from such pre-cast concrete panels includes the steps of erecting the pre-cast concrete wall panel **12** which has inbedded in its top edge **15** the wall junction box **16** having vertical access opening **26** and horizontal register opening **27**. With wall panel **12** in position, the next step is to erect the pre-cast concrete ceiling panel **13** which has the ceiling junction box **32** inbedded therein which includes the opening having the access portion **43** and the register portion **44**. The register opening **27** of the wall panel **12** is placed in at least partial register with the register portion **44** of the ceiling box **32**. Then the boxes **16** and **32** are electrically connected together by inserting the bonding wire **51** beneath the bonding screws **47**, **48** and tightening down on the screws. Finally, holes **54** are punched in cover plate **53** and screws **55** are tightened to hold the cover plate against the flanges **23**, **24**, **41**, **42** of junction box unit **14**.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred embodiment. Various changes may be made in the shape, size and arrangement of parts. For example, equivalent elements may be substituted for those illustrated and described herein, parts may be reversed, and certain features of the invention may be utilized independently of the use of other features, all without departing from the spirit or scope of the invention as defined in the subjoined claims.

Having thus described my invention, I claim:

1. A prefabricated building structure comprising a pre-cast concrete wall panel having imbedded in its top edge a wall junction box with a vertical access opening and a horizontal register opening; a pre-cast concrete ceiling panel supported by said wall panel and having imbedded therein a ceiling junction box with an opening therein including an access portion and a register portion; the register opening of the wall box and the register portion of the ceiling box being at least partly in register; and a cover plate affixed to said boxes and completely covering said access portion of the ceiling box and said access opening of the wall box.

2. The prefrabricated building structure defined in claim 1, wherein is also provided means for electrically connecting said ceiling junction box to said wall junction box.

3. The prefabricated building structure defined in claim 2, wherein said electrical connecting means includes a bonding screw in each box and a bonding wire joined therebetween.

4. A prefabricated building structure comprising a vertically positioned pre-cast concrete wall panel with a horizontal edge having imbedded therein along the horizontal edge a wall junction box with a vertical access opening and a horizontal register opening; a horizontally positioned pre-cast concrete panel having imbedded therein a horizontal junction box having a horizontal opening including an access portion and a register portion, the horizontal edge of said wall panel being in abutment with said horizontally positioned panel; the register opening of said wall junction box and the register portion of said horizontal junction box being at least partly in register; and a cover plate affixed to said boxes and completely covering the access portion of the horizontal junction box and the access opening of the wall junction box.

5. An electrical junction box unit for use in a prefabricated building structure including a pre-cast concrete wall panel supporting a pre-cast concrete ceiling panel, said junction box unit comprising wall box means including a vertical access opening and a horizontal register opening imbedded in the top edge of a pre-cast concrete wall panel; ceiling box means having an opening therein including an access portion and a register portion imbedded in a pre-cast concrete ceiling panel; the register opening of the wall box providing for registering at least partly with the register portion of the ceiling box; and a cover plate sufficiently large to cover completely the access portion of the ceiling box means and the access opening of the wall box means even when said boxes are misaligned.

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