June 25, 1968 R. S. FRIEDMAN ET AL 3,389,885

HOLDING MEANS FOR UNDERFLOOR DUCTS

Filed June 6, 1966 3 Sheets-Sheet 1

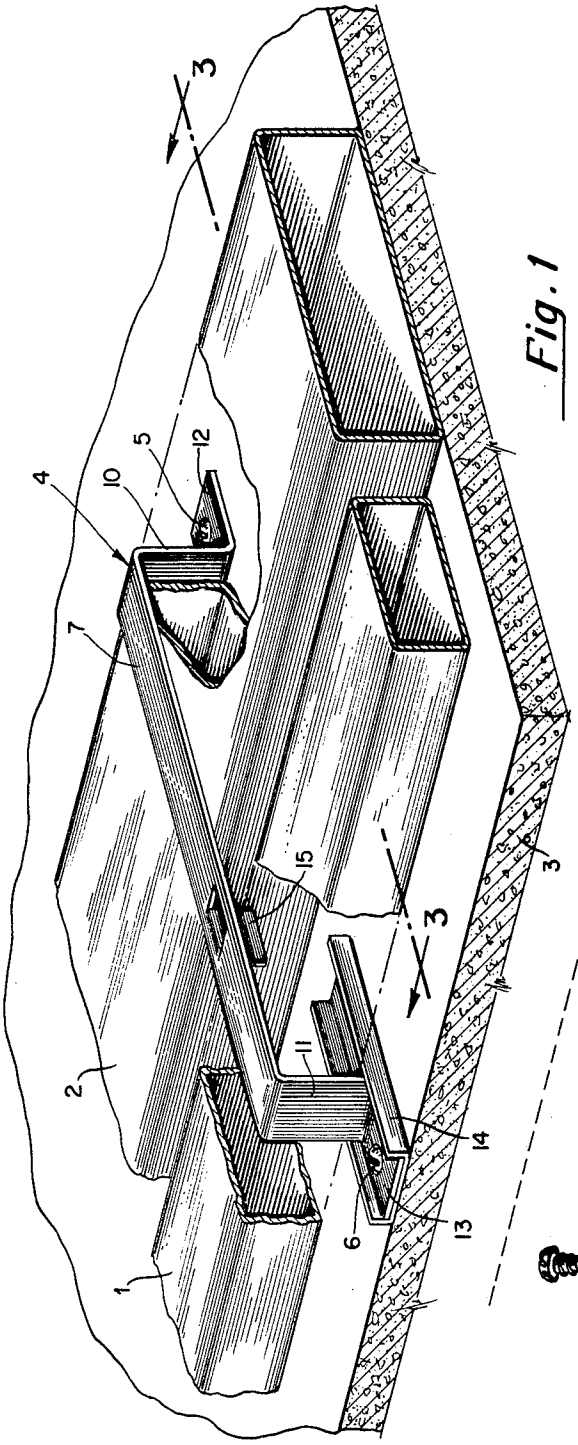
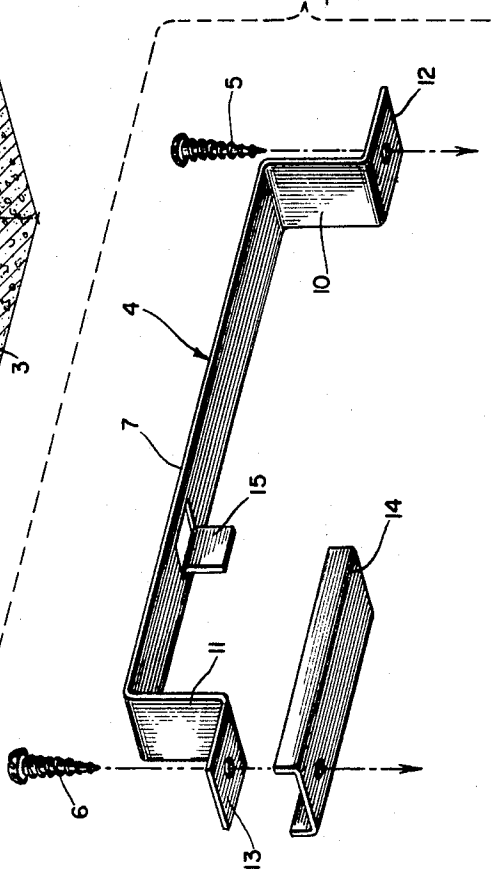


Fig. 1

Fig. 2



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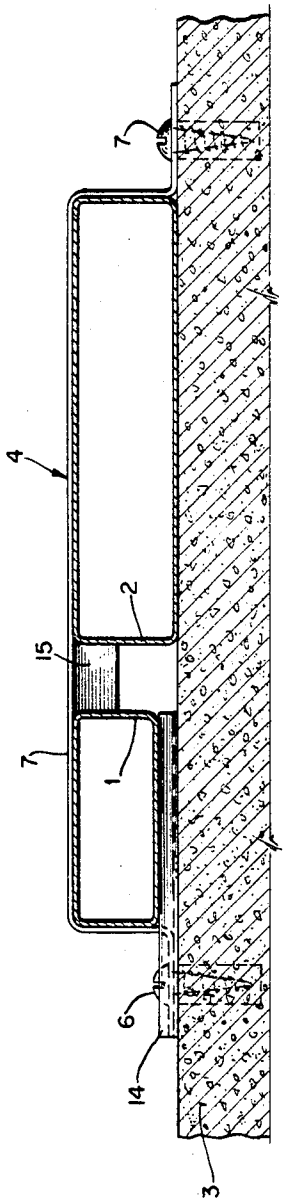


Fig. 3

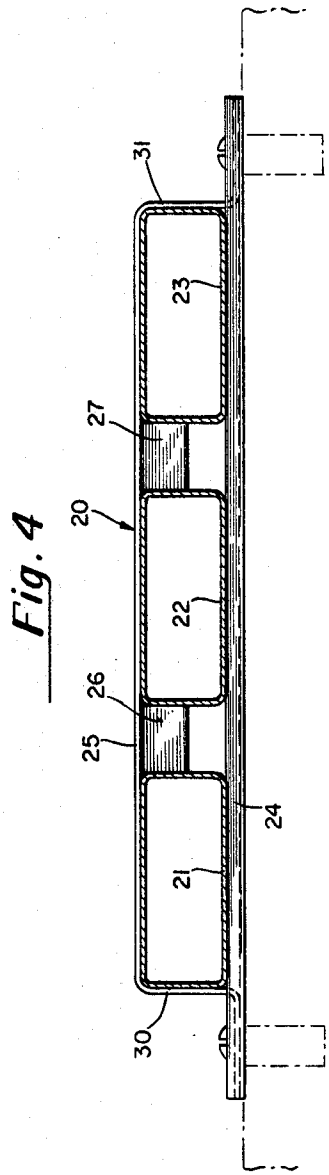


Fig. 4

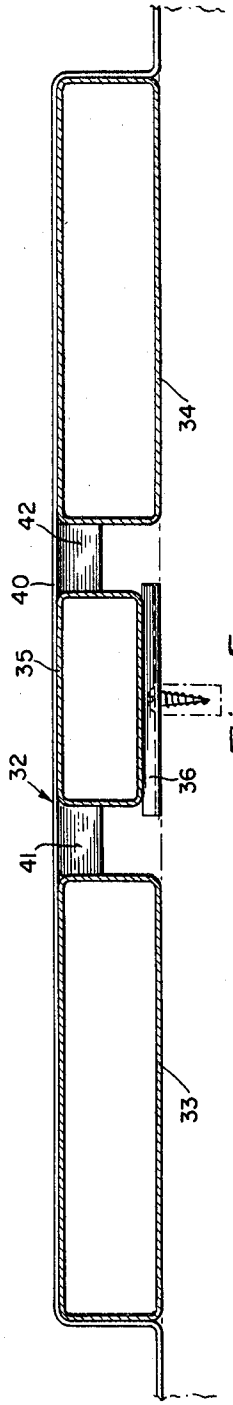


Fig. 5

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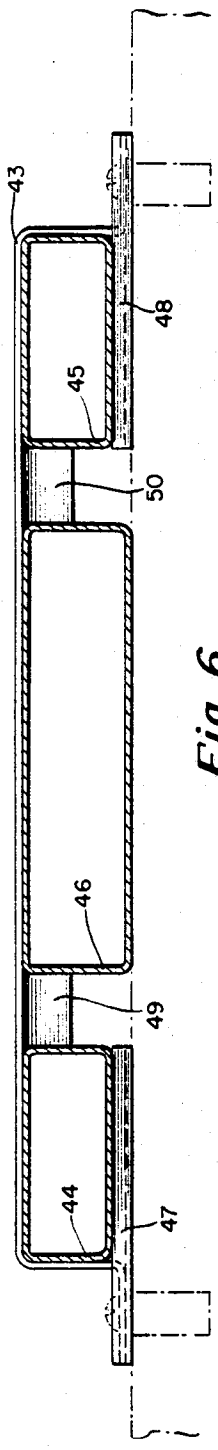


Fig. 6

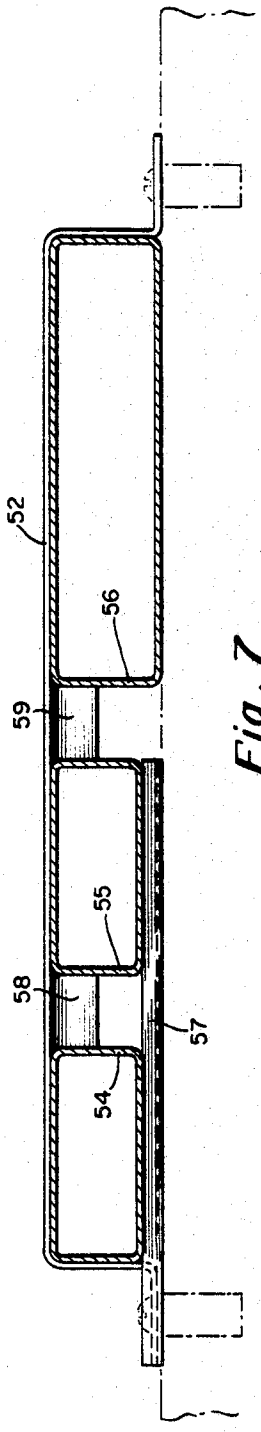


Fig. 7

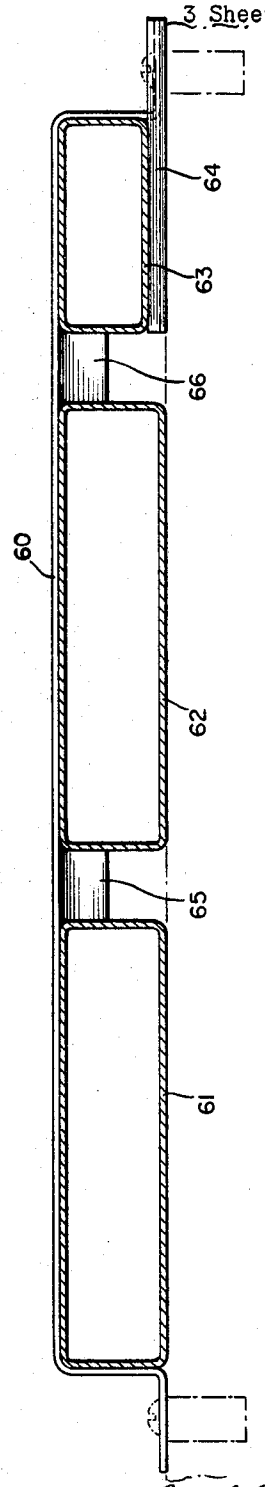


Fig. 8

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United States Patent Office 3,389,885 Patented June 25, 1968

3,389,885

HOLDING MEANS FOR UNDERFLOOR DUCTS

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Filed June 6, 1966, Ser. No. 555,584
2 Claims. (Cl. 248—361)

ABSTRACT OF THE DISCLOSURE

A U-shaped strap to envelop several underfloor ducts of the same or different sizes and having a pair of feet to mount the strap on a deck together with an upright channel supporting one of the feet and holding smaller size duct up against the strap.

This invention relates to underfloor distribution systems and in particular relates to improved means for securing underfloor ducts during the pouring of concrete.

The invention contemplates a strap-like device adapted to fit over and hold down the ducts firm against the floor and thereby provide anchoring means during the pouring of concrete, the strap having one or more tabs to desirably space the ducts in horizontal position together with a channel-like member having the special function of vertically positioning small size ducts so that the same are elevated for proper alignment with junction boxes.

One object of the invention is to provide duct hold-down means of the kind in question which is readily and easily adaptable for use in typical and conventional distribution systems employing a wide variety of combinations of duct sizes between the junction boxes.

Another object of the invention is to provide a duct hold-down device of the kind in question which is especially suitable for modern-day slab construction techniques, particularly for those instances wherein the slab is of minimum depth.

A further object of the invention is to provide a duct hold-down means of the kind in question having a simplified structure enabling very low manufacturing and installation costs.

Still another object of the invention is to provide duct hold-down means of the kind in question which can be formed from simple strip metal, bent and punched into desirable form with the use of conventional techniques and tools.

Another object of the invention is to provide duct hold-down means having a simplified structure which lends itself to rapid installation and needs no special skills or training on the part of the installer.

Further description of the invention appears below in connection with the following drawings, wherein:

FIGURE 1 is a perspective view showing conventional No. 2 and No. 4 ducts secured to a floor by the hold-down device of the invention;

FIGURE 2 is an exploded view showing the construction of the hold down device of FIGURE 1;

FIGURE 3 is a view taken on the lines 3—3 of FIGURE 1;

FIGURES 4 through 8 are views similar to FIGURE 3 showing various combinations of ducts held in position for concrete pouring.

In FIGURE 1 a No. 2 duct is indicated at **1** and a No. 4 duct is indicated at **2**. These ducts are disposed in position on the floor **3** for concrete pouring. The strap-like hold-down device **4** envelopes the two ducts and is held down against the floor **3** by the screws **5** and **6** operating in expansion plugs. The device **4** includes an elongated bridge section **7** which extends across and engages the

tops of the two ducts. A pair of legs **10** and **11** are disposed at opposite ends of the bridge and extend generally perpendicular thereto. As will be noted with reference to FIGURE 3, the side of the duct **1** engages the leg **10** and the side of the duct **2** engages the leg **11**. A pair of feet **12** and **13** are positioned respectively at the ends of the legs and extend generally normal to the legs or parallel to the bridge **7**.

The No. 4 duct rests directly on the floor **3** and the top of the duct engages the bridge **7**. The No. 2 duct is smaller in size, and in order to vertically position the duct so that it is properly aligned for entry into the junction box we have provided a channel member **14** to support the duct. As it rests on the channel member, the top of the duct is firm against the bridge **7**. The foot **12** is disposed in the channel member and the screw **6** secures both foot **12** and channel **14** firm against the floor **3**.

The ducts **1** and **2** are separated in a horizontal direction by the tab **15** which is connected to and extends downwardly from the bridge member **7**. Preferably the tab is simply a punched-out part of the bridge.

The dimensions of the parts of the hold-down device **4** are chosen so that when the ducts **1** and **2** are in the position shown in FIGURE 1 the bridge member **7** is relatively tightly engaged against the tops of the ducts and so that the tab **15** is engaged with the inner sides of the ducts, and the outer legs are engaged with the outer sides of the ducts. With the foregoing arrangement the two ducts are held against vertical or horizontal movement as is required for concrete pouring.

In any installation a plurality of hold-down devices are used to support the ducts, the devices being spaced along the duct run at appropriate intervals.

The device **4** is preferably made from hot-rolled steel fabricated in strip form. The strip is cut to appropriate lengths and with conventional punching and forming techniques is made into the configuration shown. The channels are cut from conventional stock.

The use of standard material and standard tools and techniques for fabrication is highly desirable because it reduces manufacturing costs. Further the simplicity of the device does not require expensive preparation or training for the installation personnel. Installation is very rapid, which is conducive to savings in labor costs.

Most underfloor distribution installations require ducts of various sizes and combinations in the runs between boxes. The present invention is ideally suited to these distribution systems as will be readily apparent from inspection of FIGURES 4 through 8 which illustrate the typical adaptability of the invention for a wide variety of duct combinations.

In FIGURE 4 the hold-down device **20** is used in connection with three No. 2 ducts **21, 22,** and **23**. The channel member **24** extends along the full length of the device in order to properly elevate the ducts **21–23** and hold the same for firm engagement with the bridge **25**. For maintaining horizontal separation of the three ducts the bridge **25** has a pair of tabs **26** and **27**. These two tabs firmly hold the central duct **22** and respectively hold the outboard ducts **21** and **23** firm against the outer legs **30** and **31**.

In FIGURE 5 the hold-down device **32** is used in connection with the two outboard No. 4 ducts **33** and **34**, the centrally located No. 2 duct **35**. The central duct **35** is supported on channel member **36** which properly elevates the same for junction box alignment and for contact with the bridge **40**. A pair of tabs **41** and **42** maintain horizontal separation and leg engagement in a manner similarly described in connection with the tabs **26** and **27**.

In FIGURE 6 the hold-down device **43** is used in connection with a pair of outboard No. 2 ducts **44** and **45** and an inboard No. 4 duct **46**. The channel members **47**

and 48 respectively support and elevate the No. 2 ducts. Tabs 49 and 50 maintain the duct separation and engagement in a manner as heretofore described.

In FIGURE 7 the hold-down device 52 is utilized in connection with the two No. 2 ducts 54 and 55 on the left hand side and single No. 4 duct 56 on the right hand side. Channel 57 supports the No. 2 ducts and the tabs 58 and 59 position the ducts as previously described.

In FIGURE 8 the hold-down device 60 is used in connection with No. 4 ducts 61 and 62 and a single No. 2 duct 63. Channel 64 supports the No. 2 duct, and the tabs 65 and 66 function as previously mentioned.

From the foregoing it will be observed that the hold-down devices in each case provide for the tops of the ducts to be at the minimum vertical distance away from the floor or form, and that even though the hold-down device envelopes the ducts, the additional vertical height is negligible. This minimizing of vertical height is of special advantage, particularly in cases where the slab is to be of minimum depth.

We claim:

1. Hold down means for securing underfloor ducts in position on a floor or form during concrete pouring, comprising:

an elongated bridge for engaging the top of the ducts;

a pair of legs disposed respectively at opposite ends of said bridge and extending generally perpendicular thereto for engaging sides of said ducts;

a pair of feet disposed respectively at the ends of said legs and extending generally normal thereto for use in supporting the devices upright on the floor or form;

a tab connected to and extending away from said bridge on the underside thereof for use in separating ducts engaging the bridge; and

channel means part of which is to be disposed on the floor or form adjacent one of said feet with the foot

mounted in the channel, and when so mounted the channel extending in a direction between said legs and parallel with said bridge for engaging the bottom of a duct and supporting the same against the bridge and spaced from the floor or form.

2. Hold down means for securing underfloor ducts in position on a floor or form during concrete pouring, comprising:

an elongated bridge for engaging the top of the ducts;

a pair of legs disposed respectively at opposite ends of said bridge and extending generally perpendicular thereto for engaging the sides of said ducts;

a pair of feet disposed respectively at the ends of said legs and extending generally normal thereto for use in supporting the devices upright on the floor or form;

a tab connected to and extending away from said bridge on the underside thereof for use in separating ducts engaging the bridge; and

channel means to be disposed on the floor or form to extend parallel said bridge with each of said feet being disposed in the channel, the channel being for use in engaging the bottom of ducts and supporting the same against the bridge and spaced from the floor or form.

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