A method of forming a hole in concrete wherein a plug is forced through a guiding aperture in an operative finishing plate in smoothing contact with laid wet concrete and after the concrete has set the plug is withdrawn to leave the hole in the set concrete.

1 Claim, 5 Drawing Figures
METHOD FOR FORMING HOLES IN CONCRETE SLABS AND PAVEMENTS

The invention relates to a device to be incorporated in a slip form paver for forming holes in the concrete slab during the process of conforming and extruding the wet concrete, such holes being used for mounting fixtures on the slab.

Hitherto, these holes have normally been drilled in the slabs or pavements by boring solidified concrete with a diamond tipped drill bit or core cutter.

This operation is extremely expensive, as the bits themselves cost the order of one hundred pounds each, and also compressors need to be provided to power the drilling apparatus as well as manual labour to control the same.

According to the invention there is provided a device for forming holes in concrete slabs or pavements, said device comprising a concrete finishing plate for smoothing a wet concrete slab or pavement, and a ram mounted on said plate and adapted to drive removable tubes or plugs into the wet concrete through an aperture in the plate.

When the concrete has set the tubes or plugs are extracted with an appropriately designed tool.

The invention also provides a method of forming holes in concrete slabs or pavement comprising the steps of positioning a tube or plug over an aperture in a finishing plate of a concrete paving machine, driving the tube or plug through the aperture into wet concrete there below, and subsequently removing the tube or plug from the set concrete to form a hole therein.

The invention will be described further, by way of example, with reference to the accompanying drawings, in which:

FIG. 1 is a sectional side view of a concrete paving machine showing a device in accordance with the invention, most of the concrete paving machine having been omitted for the sake of clarity;

FIG. 2 is a sectional view similar to FIG. 1, but showing the ram of the device in its depressed position;

FIG. 3 is an enlarged sectional front view through the paving machine shown in FIGS. 1 and 2;

FIG. 4 is a perspective view of a tool suitable for extracting tubes or plugs inserted into a concrete slab or pavement by the device shown in FIGS. 1, 2 and 3; and

FIG. 5 is a fragmentary enlarged perspective view of the end of the tool shown in FIG. 4.

FIGS. 1, 2 and 3 show a concrete paving machine including a device for forming holes in concrete slabs and pavements and constructed in accordance with the invention. The device comprises a concrete finishing plate 10 for smoothing wet concrete laid by the concrete paving machine. A pneumatic ram 11 is mounted over the plate 10 and is supported in a vertical disposition by two uprights 12 and a crosspiece 13, the top of the ram 11 being connected to the cross-piece 13 approximately halfway along its length (see FIG. 3). The lower end of the ram is connected to a cross member 14, each end of which slidably co-operates with a respective one of the uprights 12. The lower edge of the cross member has two recesses 15 therein for accommodating respective plungers 16. Beneath each plunger 16 a respective aperture 17 is provided in the plate 10 which is just big enough to accommodate the cross-section of the plungers 16 and the tube or plug 18 to be forced into the wet concrete.

In use, a respective tube or plug 18 is positioned beneath each plunger 16 and, upon actuation of the pneumatic ram 11, the tubes or plugs 18 are driven into the wet concrete 19 beneath the concrete finishing plate 10 through the apertures 17 therein. The aperture 17 thereby guides the tube or plug 18 during insertion into the wet concrete. When the concrete 19 has set the tubes or plugs 18 may be removed with an appropriate extraction tool (see FIG. 4) to leave the desired hole 20 in the concrete slab or pavement 19. The tool may comprise a shaft 21 having a handle 22 extending at right angles at one end and provided with notches or recesses 23 in the other end which engages with a bar 24 extending across the inside of the tube or plug 18 for removal of the tube or plug 18 from the concrete 19. Tools with other types of end fittings may be used for tube removal. It has been found that formation of holes in concrete slabs and pavements using the device of the invention does not impair the finish or strength of the concrete, and also the accuracy of position of the holes is very good.

The ram 11 could, of course, be operated hydraulically instead of pneumatically.

What we claim is:

1. A method of forming a hole in a concrete slab or pavement comprising the steps of positioning a finishing plate in overlying contact with wet laid concrete to finish form said slab or pavement, said plate having at least one through aperture, forcing a plug from above the plate through and guided by said aperture into the wet concrete below the plate, and after the concrete has set withdrawing the plug to leave a formed hole in the set concrete.

* * * * *