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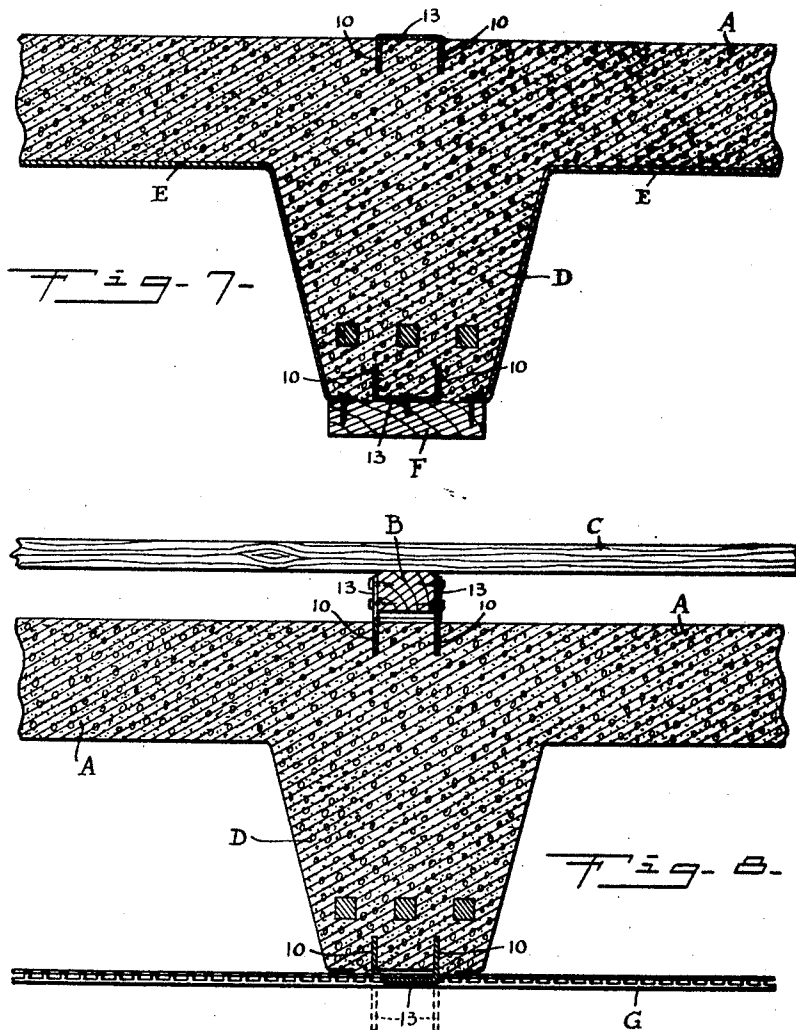
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ANCHOR STRIP FOR SECURING FINISHING STRUCTURES TO CONCRETE

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ANCHOR STRIP FOR SECURING FINISHING STRUCTURES TO CONCRETE.

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To all whom it may concern:

Be it known that I, RUDOLPH K. OLSEN, a citizen of the United States, and a resident of Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Anchor Strips for Securing Finishing Structures to Concrete, of which the following is a specification.

My invention relates to composite building-structures wherein concrete or a like material forms the principal or supporting structure, to which the trim or finishing materials are attached to form the floors, ceilings, interior and exterior wall-surfaces and the like. It is the object of my invention to provide a simple, inexpensive and easily applied means for securely anchoring to the supporting structure of concrete the various trim or finishing materials which it may be desired to attach thereto. A further object of my invention is to provide simple and effective means for securing the anchoring devices in the molds or forms in which the concrete structure is retained while in a plastic condition.

In the accompanying drawings Fig. 1 is a perspective view showing the application of my invention for anchoring and alining floor-sleepers upon a concrete slab or base, Figs. 2 to 6, inclusive, are perspective views showing various modifications of the anchor-strip provided by my invention, Fig. 7 is a transverse sectional view through a portion of the forms for a concrete beam and floor-slab, showing my anchoring devices in place in the plastic material, and Fig. 8 is a similar view with the forms removed, showing the anchoring devices in use for securing floor-sleepers and metal lath to the concrete structure.

The anchoring devices provided by my invention comprise, essentially, elongated strips of sheet metal which are disposed at the surface of the concrete structure, the strips having integral flange-portions which extend into the concrete perpendicularly to the surface at which the bodies of the strips lie, the inwardly extended flange-portions

being perforate whereby portions of the plastic material may extend transversely through the same to constitute bonds, and there being series of tongues slit from the bodies of the strips, each tongue remaining attached to the strip-body at one edge and being bendable outwardly from the strip and the face of the concrete, whereby to form members to which the desired finishing structures may be attached and thus secured to the concrete support.

Referring particularly to Fig. 2, the anchor-strip there shown comprises the flat body-portion 9 of which the longitudinal edge-portions are turned downwardly to form the continuous flanges 10, so that in transverse section the strip is a rectangular U or channel-shape. The flanges 10 each has a series of rectangular perforations 11 therein, and also at intervals has series of small circular perforations 12, for a purpose to be hereinafter noted. At positions uniformly spaced longitudinally of the strip, the tongues 13 are cut therefrom, said tongues being in opposite adjacent pairs, each pair being formed by an S-shaped slit in the body 9. Thus when any pair of the tongues are bent outwardly to positions perpendicular to the flat body 9, the space from which they are removed is a single rectangular opening in the body, as shown at the lower portion of the figure, and by dotted lines at the upper portion thereof. Normally, or until the tongues are to be used, the same are left in the flat or unerected positions, coincident with the plane of the body-portion, as shown by the full lines at the upper part of the figure. Each of the tongues 13 preferably has a number of small circular openings 14 made therein, to facilitate the attachment of the trim or finishing structures thereto, and also to readily enable the tacking of the anchor strip to the inner sides of molds or forms into which the plastic concrete is poured. The body 9 also has a number of perforations or openings 15 formed therein at positions intermediate the pairs of tongues 13.

One of the principal uses for which my

anchor-strips are adapted, is illustrated in Fig. 1, which represents the same as employed for anchoring and alining floor-sleepers upon a concrete slab or base. For this purpose, the flanges 10 of the strips are embedded in the concrete while the same is in a plastic condition, the strips being disposed substantially parallel with each other, suitably spaced apart, and with the flat body-portions 9 flush with the surface of the concrete. The anchor-strips may be set in the concrete after the same has been poured and levelled, but while it is still soft and unset, the insertion of the flanges 10 into the plastic material being readily effected, owing to the slight displacement of the material necessary for the edgewise entry of the flanges therein, and also by reason of the fact that air trapped between the partially-inserted flanges may escape freely through the openings 15 in the flat body 9. If desired, however, the anchor-strips may be placed in the forms or molds prior to the pouring of the concrete therein, and when this is done, the flat body-portions 9 may serve as guides or gages for the levelling off of the plastic material, it being remembered that the tongues 13 are left in the flat or unerected positions until needed for use. A convenient means for supporting the anchor-strips in the form or mold, prior to the pouring of the concrete, is shown at the left of Fig. 1. A wire of suitable size and length has the middle portion thereof formed into a series of zig-zag bends 16, thereby constituting a base which may rest upon the bottom of the form or mold. From said base, portions 17 of the wire are extended upwardly to pass between and rest against the inner sides of the flanges 10 of the anchor-strip, and the terminal portions 18 of the wire are then turned outwardly to extend through an opposite pair of the perforations 12 in said flanges 10. It will be noted that the perforations 12 are disposed at different heights in the flanges, so that some variation may be made in the heights at which the anchor-strips are supported above the base 16 of the wire support. The ends 18 are readily engaged in the openings 12 by springing the vertical parts 17 toward each other, and then inserting the ends 18 in the holes 12 allowing the vertical parts 17 to spring outward to retain the ends in the holes. After being so engaged with the anchor-strips the wires are not liable to be accidentally disengaged therefrom, so that a number of the wires may be attached to one of the anchor-strips, the same then set at the desired position in the form, and secured in such position by tacking or stapling the bases 16 to the bottom of the form on which they rest.

After the concrete in the slab A has become suitably hardened, the tongues 13 are

turned up to vertical position and the floor-sleepers B are inserted between the same, each sleeper, in the construction shown, extending longitudinally of one of the anchor-strips and thus lying between all of the pairs of tongues 13 thereon. The sleepers are adjusted vertically to bring the upper sides thereof to a common level, and are then secured in said adjusted or levelled positions by means of nails driven into the sides thereof through the openings 14 in the tongues. In cases where a joint or splice of the sleepers occurs at a position intermediate the tongues 13, it is preferable to employ a splicing-piece 19, as shown at the right of Fig. 1, said splicing-piece comprising a short strip of sheet metal bent to a channel shape and embracing the abutting ends of the sleeper-sections, the latter being secured thereto by nails driven through perforations in the side-portions of the channel. Looseness or downward springing or warping of one of the abutting ends of the sleeper-sections, relative to the other, is thus prevented. After the sleepers have been levelled and secured to the anchor-strips over a considerable area, the spaces between the same may be filled with cinders or other desired material (not indicated in the drawing), and the floor C then laid thereon in the usual manner.

It will be observed that when my anchor-strips are employed as above described, for attaching floor-sleepers to a concrete slab or base, the sleepers may be readily and quickly laid, since the anchor-tongues are in substantially perfect alinement with each other, the alinement of all of the tongues upon any strip being insured by the rigidity of the channel-shaped portions of the strip which connect them, and any mis-alinement of the several strips, relative to each other in any section of the floor, being easily compensated by raising or lowering the sleepers relative to the tongues 13 before nailing the sleepers thereto.

In Fig. 3 there is shown a slightly modified form of the anchor-strip, wherein the tongues 131 extend transversely of the body-strip 91, being formed by H-shaped slits in the material, said tongues being adapted for use with sleepers extending transversely of the strips, instead of longitudinally as in the structure first described. The anchor-strips of this form are employed in the same general manner as in the first-described form, but they may be spaced at somewhat greater distances apart, thus effecting a certain economy of material. It is desirable when setting these anchor-strips in the concrete that all of the strips be started from the same base-line, which will insure the desired transverse alinement of the tongues 131 upon the several strips, without measurement or other troublesome procedure. The

flanges 101 are shown as provided with large circular perforations 111 therein, which will be understood as equivalent to the rectangular perforations 11 in the flanges 10 of the strips 9, and it will be obvious that the perforations of the concrete-embedded flanges may be of any suitable shape such that the plastic material will flow through the same and thus bond the flanges securely in the body of the concrete. The perforations 121 in the flanges 101, the perforations 151 in the body-strip 91, and the openings 141 in the tongues 131, will be understood as equivalent, respectively, to the perforations 12, 15 and 14, of the first-described anchor-strip.

In that form of the anchor-strip shown in Fig. 4, the flanges 102 are notched or serrated, so that said flange-portions are almost discontinuous longitudinally. This form of the anchor-strip is suitable for use where it is desirable that the same have a certain longitudinal flexibility, as where it is required that the same conform with a surface having more or less curvature. Except for the difference in the flange-portions, this type of the anchor-strip is substantially the same as that shown in Fig. 3.

A further modification of the form of the anchor-strip is represented in Fig. 5, wherein the side-flanges 103 are relatively short, and have therein only the small perforations 123 for receiving the end-portions 18 of the wire seating-members. The main flanges 100, for embedding in the concrete, and which are provided with the bonding-perforations 113, are each formed by slitting the body-strip 93 at three sides of a rectangular portion thereof, and bending downwardly the elongated tongue or flange-section thus formed, each of the flange-sections remaining attached at one side to the body-strip, and the successive flange-sections being preferably staggered or alternating from side to side of the body-strip. In this form of the anchor-strip a slightly narrower piece of sheet metal may be used, from which to form the strip, than in the preceding forms wherein the side flanges are of greater depth and the body-strip is continuous except for the portions cut out to form the tongues 13, 131 and 132. It will be noticed that in the modification now under consideration, that the strip has a ladder-like form, there being at each side a continuous angular or L-shaped part, these L-shaped side-portions being connected to each other by a series of longitudinally spaced cross-bars, between which the material is displaced to form the tongues 133 and the deep flanges 100.

A further modification of the anchor-strip structure is illustrated in Fig. 6, wherein the side flanges 104 are relatively short, and the intermediate portions of the body-strip 94 consist of a series of longitudinally spaced transverse bars which are bowed down-

wardly, so that when in use said transverse bowed portions will be embedded in and covered by the concrete, leaving at the surface thereof only the tongues 134 which are initially in the flat or unerected positions shown at the lower part of the figure, and which for use are turned outwardly to the positions shown at the upper part of the figure.

Referring now to Fig. 7, there is shown in transverse section, portions of the forms or molds for making a concrete beam or floor-joist integrally with floor-slabs A, the mold or form comprising the arch-pans E supported upon soffits F, the latter being the bottom of the form for the joist D. In this which is a common type of concrete floor-construction, my anchor-strips may be used for retaining the floor-sleepers, as previously described, and may also be placed in the bottom of the joist D, to serve subsequently for the attachment thereto of metal lath G, as represented in Fig. 8. For the last-named use of the anchor-strips, the same are placed in the mold or form prior to the pouring of the concrete therein, the strips being inverted so that the flanges 10 extend upwardly, and being secured to the soffits F by tacking through the perforations 14 in the tongues 13. After the concrete is poured and hardened, and when the forms are removed, the soffits F easily become detached from the tacking, without loosening the anchor-strip from the concrete more than to effect a slight downward bending of the tongues 13. Then, when the metal lath is to be applied, the tongues are bent to extend straight down, as indicated by dotted lines in Fig. 8, and after the tongues pass through the slots or openings of the lath they are again bent or clinched against the lower side of the lath, whereby to securely retain the same upon the joists. By this means of attachment, the metal lath may be quickly and smoothly applied, and the subsequent plastering thereof greatly facilitated.

From the illustrated and described examples of the structure and manner of use of anchor-strips embodying my invention, it will be apparent to those skilled in the art that the same may be embodied in a great variety of forms, and may be used in almost every situation where it is desirable to attach or anchor to a concrete supporting structure a trim, finish, or surfacing which is applied subsequently to the molding and hardening of the concrete.

Now, having described my invention, what I claim and desire to secure by Letters Patent is:

1. Anchoring means for securing finishing structures to concrete supports, comprising a relatively long strip of sheet metal, the body-portion of said strip disposed at the surface of the concrete, continuous flanges integral with the longitudinal edges of the

strip and extending into the concrete, and a series of longitudinally spaced perforate tongues slit from the body-portion of the strip intermediate said continuous longitudinal flanges, said tongues normally lying in the plane of the body-portion and being bendable to extend outwardly therefrom whereby to project from the surface of the concrete at uniformly spaced and alined positions. 10

2. A structure as set forth in claim 1, including perforate tongues slit from the body-portion of the strip intermediate the continuous longitudinal flanges and extending therefrom into the concrete.

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