

[54] **CUTOUT FORMS FOR CONCRETE FENCE CONSTRUCTION**

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[21] Appl. No.: **278,829**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 2,897, Jan. 14, 1970, abandoned.

[52] U.S. Cl. **249/19, 249/35, 249/40, 249/91, 249/104, 249/191**

[51] Int. Cl. **E04g 11/00**

[58] Field of Search 249/15, 16, 18, 19, 20, 249/22, 23, 33, 38, 39, 35, 44, 104, 143, 47, 40, 176-177, 190-194, 213; 61/61

[56] **References Cited**

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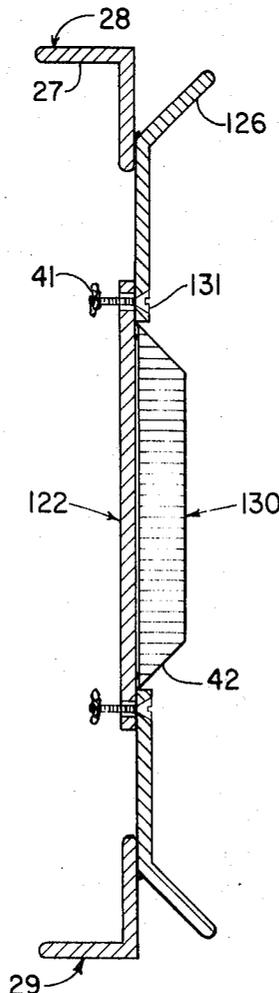
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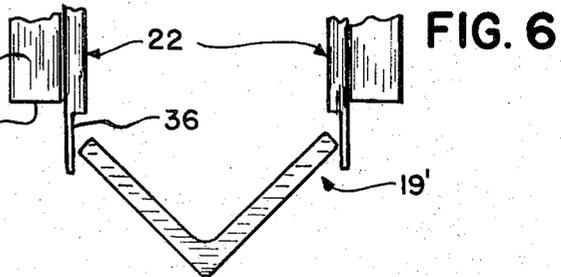
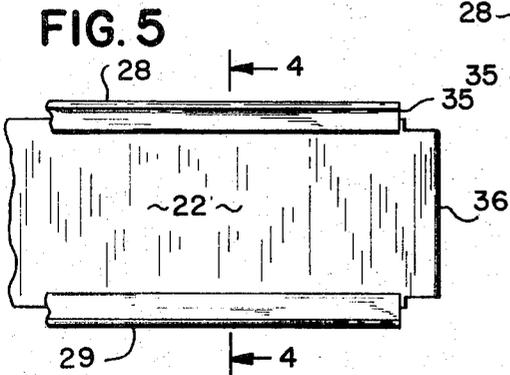
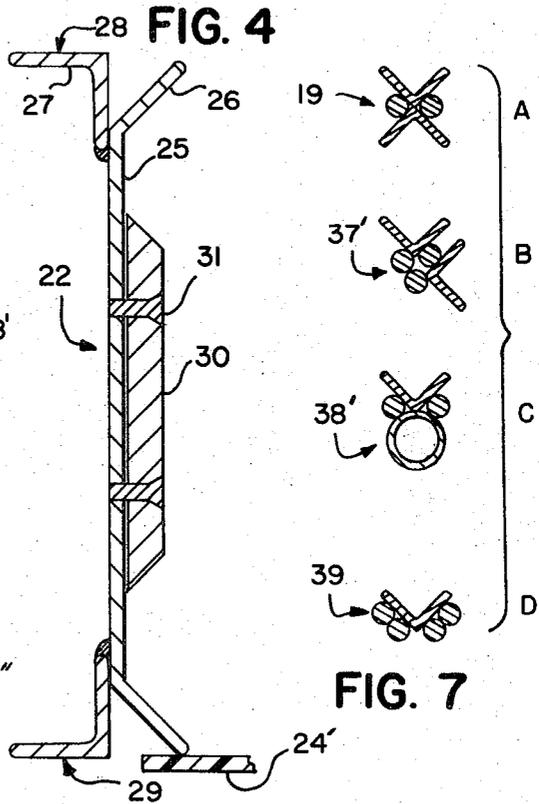
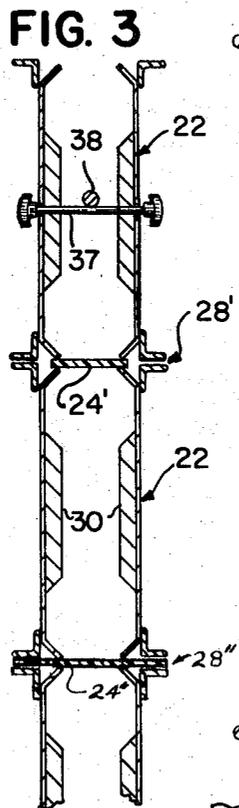
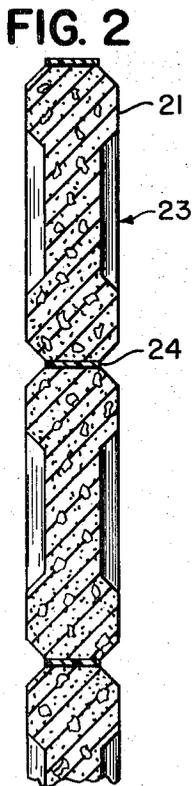
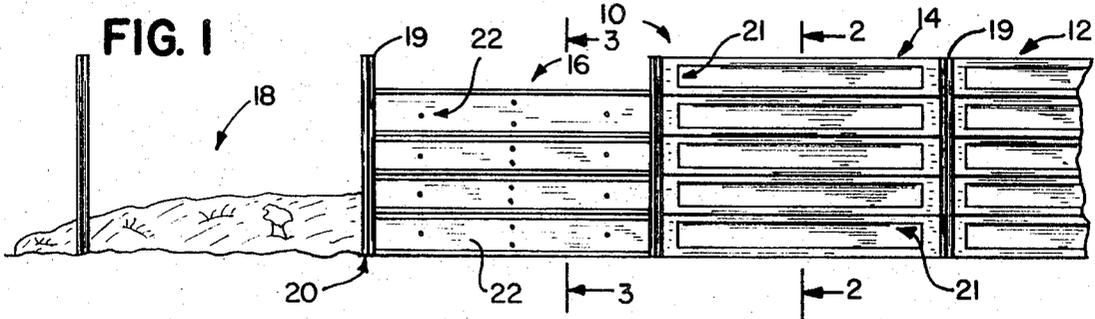
Primary Examiner—Robert D. Baldwin
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[57] **ABSTRACT**

Disclosed is apparatus for constructing a concrete fence using spaced apart fence posts which are cemented into the ground along a surface where the fence is to be built. The posts each having configuration which enables spaced apart pairs of cement forms to be attached thereto with each pair of forms being superimposed upon one another and with adjacent spaced apart forms being held in alignment with respect to each other and the posts to provide a concrete fence mold. Concrete is poured into the space between the forms with a portion of the concrete flowing into a cavity provided within each of the posts whereby removal of the forms after the concrete has hardened provides a non-rigid concrete fence which is captured and held in proper position by the posts.

3 Claims, 12 Drawing Figures





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FIG. 8

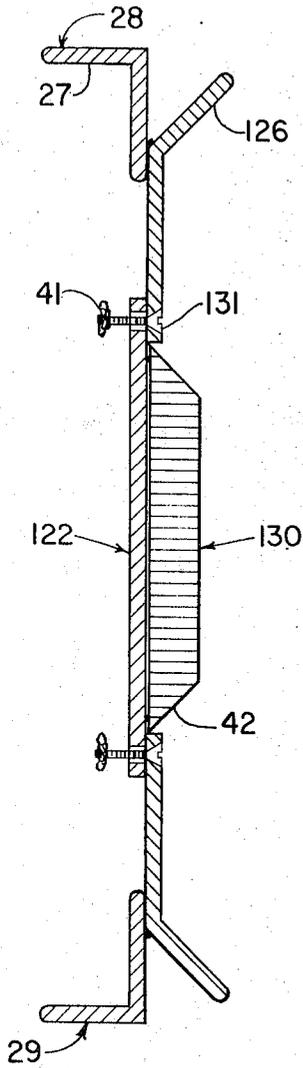


FIG. 9

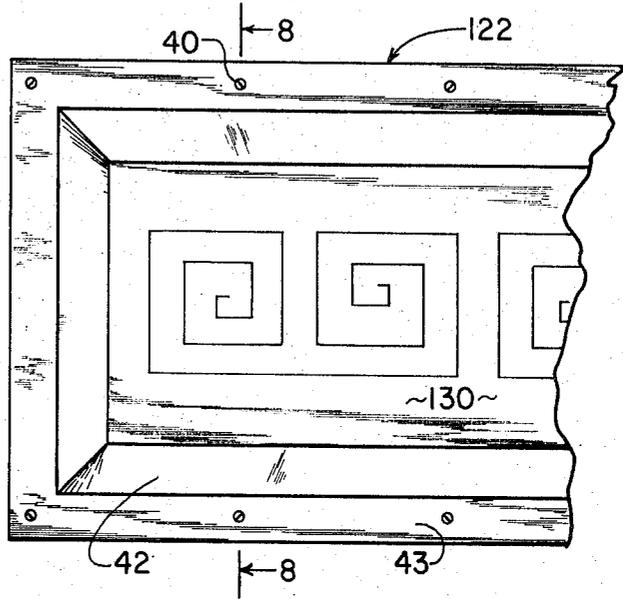


FIG. 10

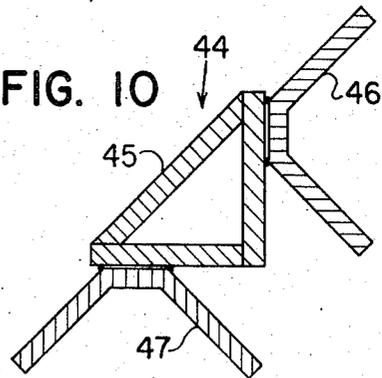


FIG. 12

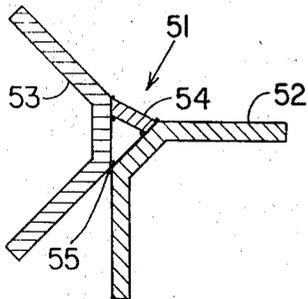
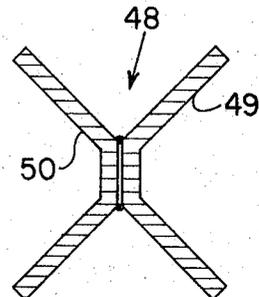


FIG. 11



CUTOUT FORMS FOR CONCRETE FENCE CONSTRUCTION

This application is a continuation-in-part of applicants' copending application Ser. No. 2,897 filed Jan. 14, 1970, now abandoned.

Fabrication of a concrete fence involves extensive labor costs because the laying of concrete blocks and the like requires the services of a skilled craftsman. Usually the costs of labor exceed the cost of the raw materials used in building the fence. In order to reduce labor costs, others have heretofore prefabricated concrete fences in sections and attached each preformed section together in series in relationship. A prefabricated concrete fence of this nature is difficult to maintain properly aligned in a horizontal plane because the massive fence sections must be manipulated by heavy trucks having cables attached thereto. One major problem with fence construction of this type is the appearance of cracks in the prefabricated fence sections as the sections settle into place over a period of time.

It is therefore desirable to be able to fabricate a concrete fence with the fabrication occurring in situ so as to dispose the fence in properly arranged relationship upon the surface of the ground as it is being constructed. It is also desirable to be able to provide an improved, attractive fence which can be built using unskilled labor, and which will not be susceptible to crack development as it settles. It would also be desirable to be able to provide a new apparatus for building a concrete fence which would enable the ordinary person to fabricate his own fence without enlisting the aid of skilled technicians, and which can be easily repaired should a portion thereof become damaged after the fence has been built.

SUMMARY OF THE INVENTION

This invention sets forth an apparatus for concrete fence construction which enables an attractive low cost fence to be built along a fence line by erecting spaced apart metal posts along the desired fence line, with the posts having a particular configuration which enables it to receive spaced apart concrete slabs therein. The concrete is poured inbetween adjacent spaced apart forms attached to the fence posts to ultimately provide individual vertically aligned slabs of attractive concrete. The posts have vertically disposed, oppositely arranged portions in the form of a cavity which receives the wet concrete therein, and after the concrete has hardened, the forms may be removed to thereby provide a self supporting structure comprised of individual superimposed slabs of concrete which are held together by spaced apart, adjacent metal fence posts.

It is therefore an object of the present invention to provide an attractive concrete fence which can be built along a fence line and over any type terrain.

Another object of the present invention is the provision of an apparatus for constructing a fence in a simplified and economical manner which enables the average hobbyist to fabricate his own fence.

A further object of the present invention is an apparatus for building a concrete fence wherein vertically aligned slabs may be removed should it become necessary to effect a repair upon the fence.

A still further object of the present invention is the provision of a method of fabricating a fence by utilizing spaced apart concrete forms which are held together by

spaced apart metal fence posts, all of which cooperate together in a manner to enable vertically disposed slabs of concrete to be manufactured in situ.

Still another object of this invention is the provision of a concrete form for fabricating fences.

An additional object of this invention is the provision of a new type of concrete fence which is attractive in appearance, low in cost, easy to manufacture, and rugged in construction.

The above objects are attained in accordance with the present invention by the provision of an apparatus for constructing a fence essentially as outlined in the above abstract and summary.

Various other objects and advantages of this invention will become readily apparent to those skilled in the art upon reading the following detailed description and by referring to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of a fence which is undergoing fabrication in accordance with the present method;

FIG. 2 is an enlarged, fragmentary, cross-sectional view taken along line 2—2 of FIG. 1;

FIG. 3 is an enlarged, fragmentary, partial cross-sectional view taken along line 3—3 of FIG. 1;

FIG. 4 is an enlarged, cross-sectional view of a portion of the apparatus disclosed in FIG. 3, with some parts being broken away therefrom;

FIG. 5 is a reduced, fragmentary side elevational view of a portion of the apparatus seen in the foregoing figures;

FIG. 6 is an enlarged, fragmentary, top plan view of part of the apparatus seen in FIGS. 1 and 3;

FIG. 7 (A, B, C, and D) sets forth several cross-sectional views of different fence posts which are considered part of the apparatus seen in FIGS. 1 and 6;

FIG. 8 is a vertical cross-sectional view of another embodiment of the invention taken along, which is similar in many respects to the embodiment disclosed in FIG. 4;

FIG. 9 is a plan view of part of the structure disclosed in FIG. 8; and

FIGS. 10, 11, and 12 are enlarged horizontal cross-sectional views of various fence posts which are used in conjunction with the fence of the instant invention.

DETAILED DESCRIPTION OF THE EMBODIMENTS

FIG. 1 broadly sets forth the apparatus of the present invention. The arrow at numeral 10 indicates a fence being fabricated in situ according to the method of the present invention. The fence is being constructed along a fence line wherein vertically aligned, horizontally disposed slabs of concrete are superimposed upon one another and between adjacent fence posts to provide a concrete fence which has completed sections at 12 and 14. The arrow at numeral 16 illustrates a partially completed section of fence which is in the act of being fabricated, while the arrow at numeral 18 illustrates a section of fence which is yet to be built.

Spaced apart fence posts 19 are preferably cemented into the ground as illustrated at 20, although the posts could be vertically disposed and driven into the ground if desired. The fence is comprised of a plurality of superimposed vertically aligned concrete slabs 21 which are maintained in alignment with the remainder of the

fence by the spaced apart posts. The slabs are individually cast within the spaced apart superimposed concrete forms 22 which are assembled in pairs and attached to adjacent spaced apart posts to form a mold for each individual slab.

As seen in FIG. 2, each slab has art work or indicia 23 which preferably is in the form of lightening holes, but can also take on the form of protuberances, as may be desired, so as to lend a more attractive appearance to the fence while at the same time reducing the amount of concrete required to fabricate each slab. Each slab is spaced apart from an adjacent lower slab by means of insulation in the form of a longitudinally disposed felt pad 24.

As seen in FIG. 3 in conjunction with FIGS. 4-6, the forms are identical to one another and comprise adjacent aligned members having an inside surface 25 which is inwardly bent along a marginal longitudinally extending edge portion, one of which is seen at numeral 26, so as to reduce the thickness of the completed slab at its upper and lower extremity. Longitudinally extending beam member 27 is in the form of an "angle iron" and provides a bearing surface 28 which bears against a complementary bent portion such as is seen at 29. The felt which is interposed between adjacent slabs can be placed as seen at 24' although it is preferred to arrange the felt in a manner as indicated by the numeral 24''.

The before mentioned inwardly turned portion 26 has a terminal end which is horizontally displaced from bearing surfaces 28 or 29 an amount which enables the before mentioned insulation to be compressed therebetween while at the same time one bearing surface 28 bears directly against or is supported by an adjacent bearing surface such as seen at 29 on another superimposed member. Where the felt is disposed in the manner indicated by numeral 24'', the terminal ends of portion 26 can be extended into alignment with bearing surface 29, as may be desired.

A removable panel bearing art work, which may take on several different forms, is illustrated herein as being a mold for forming lightening holes 23. Fastener means 31 secures the panel to the inside wall surface of each form and enables different configurations of panels to be employed. The terminal edge portions 35 of the before mentioned longitudinally extending member 27 is shortened so as to leave the marginal vertical edge portion 36 of the form where it can be received in overlapping relationship with respect to a post, with edge portions 26 being coextensive therewith.

As seen in FIG. 7, the posts may take on several different forms and preferably are comprised of welded-up sections of round steel stock and angle iron. As seen at A, two oppositely disposed angles have the apexes thereof affixed to each other by oppositely disposed reinforcing rods assembled to provide a fence line post. FIG. B shows the angles disposed with the rod in a manner to enable a 90° turn to be made in the fence line. FIG. C shows a gate post comprised of a pipe to which an angle is welded with two reinforcing rod members. FIG. D shows a dead head fence post comprised of an angle iron reinforced with the rods.

The lower extremity of each post is provided with a lug or step at 20 for receiving the lower surface 29 of the lowermost form. The lug is located near or slightly below ground level, and eliminates the necessity of expensive footing or foundation. A post 19, for example,

requires two diametrically opposed lugs with each lug supporting each of the adjacent lowermost forms of sections 12 and 14.

FIG. 8 sets forth a modification of the structure disclosed in FIG. 4, with like numerals being used therein to indicate like or similar parts with respect to the foregoing figures of the drawing. As seen in FIG. 8, the forms include the before mentioned spaced apart longitudinally extending beam members 28, 29 to which there is attached an inwardly bent member having a free end portion at 126, and a central cut-out for receiving part of the removable member 122 therethrough. The removable member includes an inwardly directed member 130 having spaced apart sloped surfaces 42 which form lightening holes in the individual completed slabs of the fence. Apertures 40 are formed in the marginal edge portion 43 of the removable member so that the illustrated countersunk fastener means 131 can be received therethrough. Wing nuts 41 removably affix the removable member into proper position on the assembled form.

The inside face at 130 can be used to advantage by placing recessed or projecting artistic indicia or designs thereon so that the art work is transferred onto the completed slab of concrete. Various type art work can be transferred onto each individual slab by selection of the proper member 130 from among any number of different members of different designs.

In FIG. 10, a post 44 is disclosed which enables the fence to turn 90°. The post is made up of a boxed 90° triangle 45, to the sides of which there is attached, by welding, the illustrated slab receiving members 46 and 47.

In FIG. 11, a post 48 is disclosed which enables the fence to continue in a straight line. The post is made of two opposed metal members 49 and 50 having the joining edges thereof welded together to form a unitary structure.

In FIG. 12, a post 51 is disclosed which enables the fence to turn 45°. The post is made of opposed metal members 52, 53 having their joining edges 55 welded together with the similar opposed edges being welded in spaced apart relationship by interposing spacer member 54 therebetween. The width of the spacer member can be selected to provide the fence with a turn of any desired angular displacement which is reasonably greater or less than the specified 45°.

It will be noted that the slab receiving portions of each of the posts 44, 48, and 51 are identical in construction. Accordingly, by fabricating the posts in the illustrated manner, a great savings in both labor and material is effected.

The fence is preferably fabricated in the following manner: spaced apart fence posts 19 having outwardly opening cavities formed therein, such as seen in FIG. 7A, are permanently supported within the ground by either driving the post into the ground or alternatively, by cementing each post into the ground. Each post has the lug thereof properly aligned with respect to the remaining lugs, and each post is also aligned with an angle 19' thereof facing along the fence line so as to enable forms 22 to be properly received thereon. Terminal end portions 35 of longitudinal member 27 terminates near or adjacent to an edge portion of member 19', while the edge portion 36 is outwardly received by one of the angles of post 19'. This expedient enables the post to maintain the forms rigidly attached thereto

and additionally enables bolts 37 to be placed through each of the pair of forms by utilizing the illustrated wing nuts as best seen illustrated in FIG. 3 at 38. As seen in FIG. 1, several bolts may be used in conjunction with each slab where deemed desirable. The centrally located bolts also provide a support for positioning reinforcing concrete rod 38 at the optimum location while at the same time the bolts maintain adjacent forms aligned with each other and thereby prevent the heavy green concrete from outwardly deforming or bowing the forms.

The forms are preferably set upon one another in the manner of FIG. 3 with felt padding being placed between the interfaces of each pair of adjacent forms in the manner illustrated at either 24' or 24". After concrete has been poured into the area provided by the adjacent forms, another layer of felt is placed upon the upper extremity of the uppermost pair of forms, and still another pair of forms placed thereupon and filled with concrete so as to provide a plurality of vertically aligned slabs such as seen in FIG. 1.

After the cement has hardened, the forms are removed by unscrewing the wing nuts, thereby freeing the forms from the posts and cured slabs, and thereafter the ends of bolt 37 are cut off flush with the outer surface of the slabs so as to leave the slabs of concrete captured within the cavity of each adjacent post.

Since the slabs are primarily supported by the posts, they must be cemented into, or otherwise secured within the ground with sufficient support to withstand any predetermined wind loading. The depth of the posts within the ground depends upon the characteristics of the sub-soil, the height of the fence, and the gust loads peculiar to the particular geographical location of the fence.

Since each superimposed slab is insulated from the other by the felt pad 24, and since the end portions of the slabs are captured within the cavity of the individual posts, the slabs are free to move with respect to one another, and accordingly, settlement of the fence over a period of time will not produce the usual cracks found in a fence of the prior art unitary construction. This "floating" action of the individual slabs accounts for the lack of crack development therein. The individual slabs are free to move with respect to the other and to the post and for this reason, should a slab become damaged due to impact from a foreign object, the broken slab can be removed and a new slab installed by merely pouring another new slab into place from the upper extremity of the fence line.

The metal forms are rugged and can be used for building an indefinite number of fences. While only six pairs of forms are required for constructing an entire section of a fence of the usual fence height, it is preferred to cast or build several sections at a time so as to expedite the work.

It is pointed out that various indicia of an artistic nature may be provided by member 30 so as to present an attractive personalized appearance. While it is preferred to use member 30 as a lightening hole, the member could instead be outwardly directed rather than forming the inwardly directed cavity seen at 23. While felt has been illustrated as the particular insulation employed between adjacent slabs, other fibrous or plastic-like material of various thickness can be substituted therefor.

The present invention enables the hobbyist to fabricate his own fence since it is a simple expedient to lay out a fence line by cementing posts into the ground. The fence can be built by filling the adjacent superimposed forms with concrete until all the forms have been used up, whereupon the concrete is allowed to harden overnight after which the forms are removed and another section of the fence built.

I claim:

1. Apparatus for building a ground supported wall structure, comprised of spaced apart vertically disposed posts having a marginal lower end thereof placed into the ground for supporting said structure; each post having at least one vertically extending outwardly opening cavity formed therein with cavities of adjacent posts being directed toward one another;
 - a first pair of adjacent spaced apart forms longitudinally aligned in parallel relationship respective of one another, each form having a vertical marginal edge portion affixed to said post so as to provide a panel forming mold which includes said cavities, so that uncured cement can be contained therewithin when poured thereinto;
 - a second pair of adjacent spaced apart forms disposed in aligned relationship respective of one another and parallel to and superimposed upon said first pair of forms so that uncured cement can be contained therewithin when poured thereinto;
 - each said form having spaced apart upper and lower longitudinally extending beam members which define the height of said form; an inside member having a longitudinally extending free edge portion which is greater in length than said beam members; said beam members being attached to said inside members with the opposed terminal end portions thereof terminating short of the opposed edge portion of said inside members, thereby leaving said vertical marginal edge portion which is received outwardly of said cavity and in abutting relationship with respect to said post;
 - each said inside member is provided with a cut-out; said cut-out being spaced apart from said spaced apart beam members, a removable member having an inside face upon which indicia has been formed; means affixing said removable member to said inside member, so that; pairs of opposed forms may be arranged with the indicia facing towards each opposed panel, thereby enabling the indicia to be transferred to the uncured cement;
 - adjacent opposed vertical free edge portions of each said inside member being spaced apart from one another a smaller distance relative to said adjacent spaced apart beam members so that complementary superimposed beam members bear against one another while adjacent said longitudinally extending free edge portions are spaced apart sufficiently to enable insulation to be placed therebetween so that when the uncured cement hardens, concrete slabs are formed which are removably captured within the cavities of the post, with each of the slabs being insulated from one another.
2. The apparatus of claim 1 and further including apertures placed in each form in aligned relationship respective of one another; bolts placed through said apertures so that, the bolts, when placed in tension, hold said vertical marginal edge portion of the panels to said posts.

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3. The apparatus of claim 1, wherein one said post is comprised of U-shaped members which form said cavity, said U-shaped members being a piece of rectangular metal having opposed longitudinal marginal edge portions bent towards one another with the base of ad-

jacent members being welded together to form a post having cavities arranged on opposed sides thereof and within which slabs can be formed and to which panels can be attached.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,844,522 Dated October 29, 1974

Inventor(s) GAYLE COCHRAN

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Line 76 of the cover page of the Letters Patent:
Correct the inventor's address to read --1422 Crescent,
Odessa, Texas 79762-- instead of "6904 N. Russell Ave.,
Texas. 79760".

Signed and sealed this 15th day of April 1975.

(SEAL)
Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents
and Trademarks