

[54] FOUNDATION WALL PROTECTIVE SHEET 107,188 7/1965 Norway..... 52/169  
[75] Inventor: Jon Bergsland, Oslo, Norway  
[73] Assignee: Oivind Lorentzen Activities, Inc.,  
New York, N.Y.  
[22] Filed: Apr. 11, 1973  
[21] Appl. No.: 350,280

[52] U.S. Cl..... 61/11; 52/169  
[51] Int. Cl. E02b 11/00; E02d 31/02; E02d 27/48  
[58] Field of Search ..... 52/169, 58, 631, 62, 60,  
52/61, 302, 303, 305; 61/10-13; 210/496, 498

[56]                      References Cited

| UNITED STATES PATENTS |         |              |            |
|-----------------------|---------|--------------|------------|
| 1,928,589             | 9/1933  | Earley.....  | 52/305     |
| 1,981,434             | 11/1934 | Shodron..... | 52/303     |
| 2,154,734             | 4/1939  | Doing.....   | 52/305     |
| 2,977,103             | 3/1961  | Smith.....   | 161/134 UX |
| 3,495,363             | 2/1970  | Johnson..... | 52/60      |
| 3,654,765             | 4/1972  | Healy.....   | 52/169     |
| 3,754,362             | 8/1973  | Daimler..... | 52/169     |

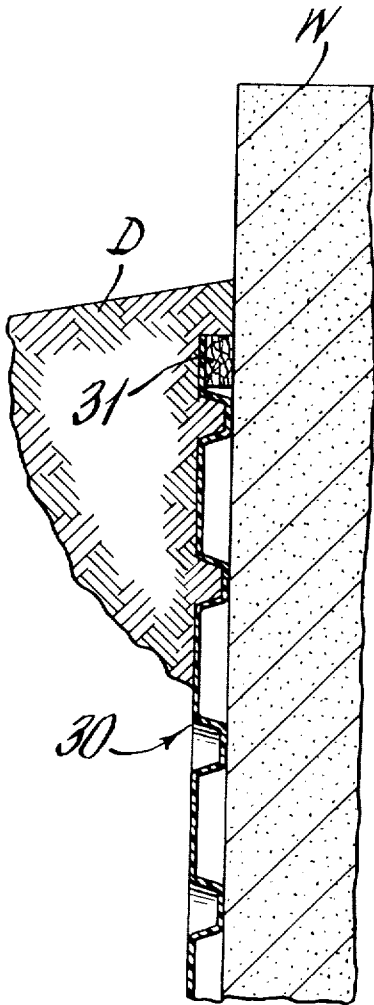
| FOREIGN PATENTS OR APPLICATIONS |        |              |        |
|---------------------------------|--------|--------------|--------|
| 1,964,769                       | 9/1970 | Germany..... | 52/169 |
| 111,836                         | 9/1967 | Norway.....  | 52/169 |

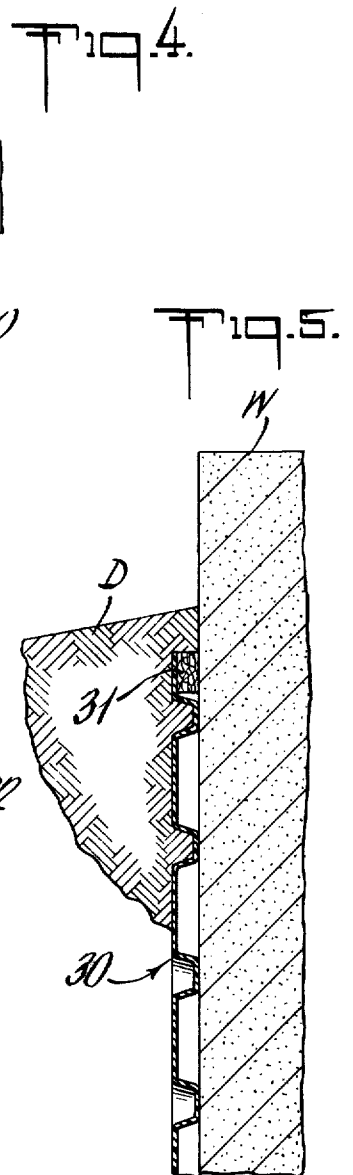
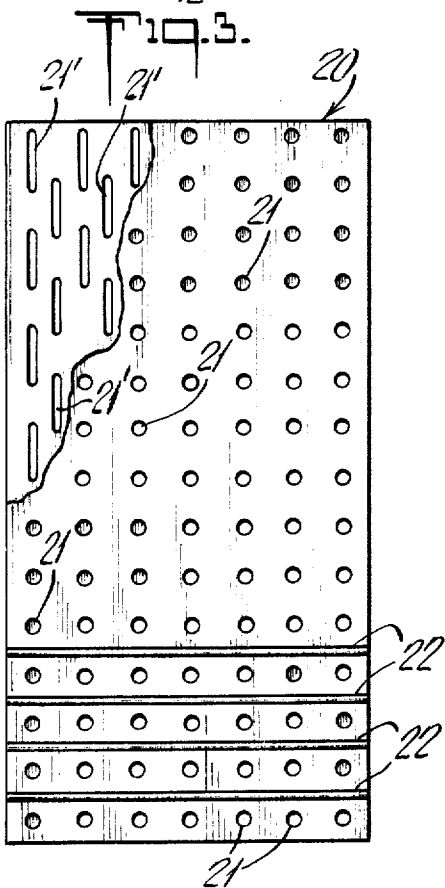
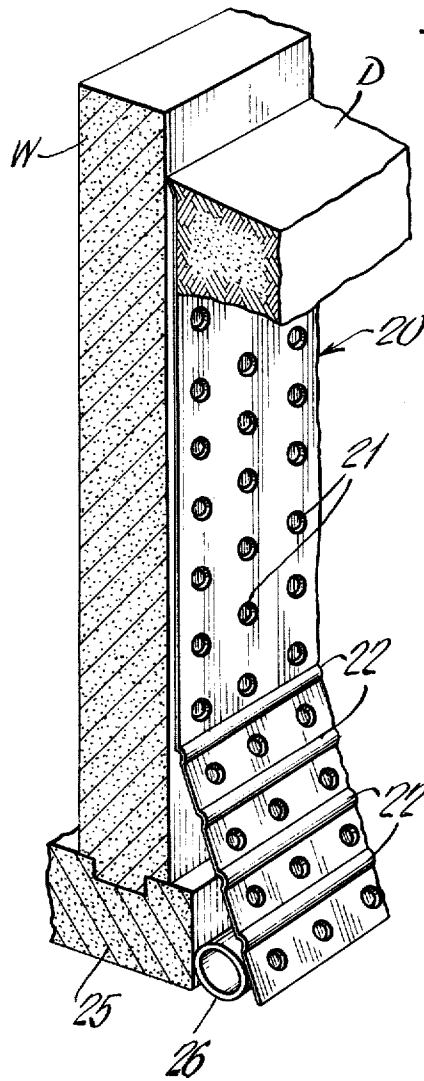
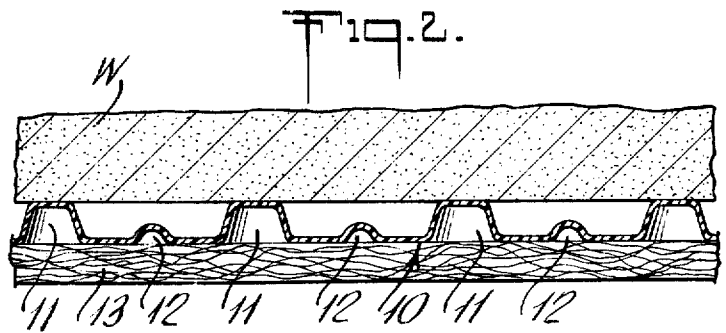
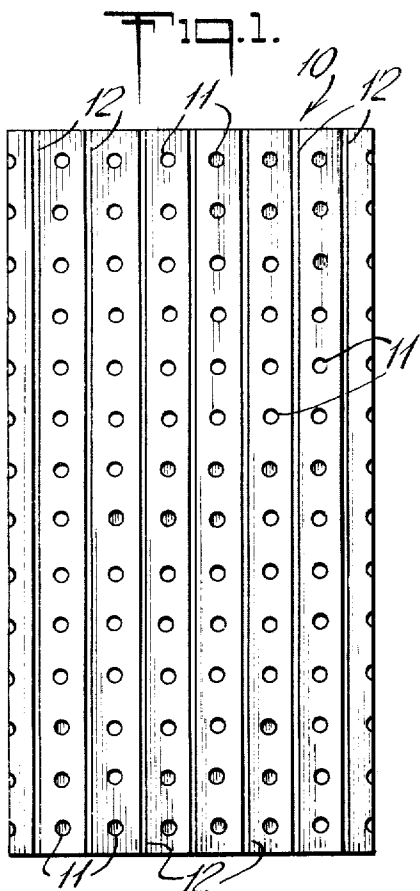
Primary Examiner—John E. Murtagh  
Attorney, Agent, or Firm—Nolte and Nolte

[57]                      ABSTRACT

Improvements in protective membranes or sheets for foundation walls are disclosed. The sheets have regular courses of protrusions for spacing the sheet from the foundation wall and a porous backing for drainage outwardly of the sheet. The protrusions provide air channels between the protective sheet and the foundation for thermal insulation and for facilitating drying of the foundation wall. Small vertical ribs between the courses of the protrusions provide convenient water passages to take care of drainage water in the porous backing without interfering with the air spaces and incidentally providing bending vertical lines for more facile installation handling. Modifications of the sheet include transverse ribs at lower portions of the sheet to allow horizontal bending thereof over footing and drainage configurations. A barrier for preventing back fill from falling between the protective sheeting and foundation is also disclosed.

2 Claims, 5 Drawing Figures





## FOUNDATION WALL PROTECTIVE SHEET

### BACKGROUND AND NATURE OF THE INVENTION

Previously, imperforate protective sheets or membranes or plates, as they are called, having dimples or studs or other protrusions stamped or otherwise formed therein, have been applied to the outside of a foundation wall to create air channels between the web of the sheets and the foundation wall. It is also been proposed in my pending application Serial No. 315,056, filed Dec. 14, 1972, now abandoned, to provide a layer of porous material, such as fiber glass, stone wool or foam plastic, on the outside of such sheets to provide good drainage in the back fill.

The present invention utilizes the protective sheets just described, which are made of a relatively stiff imperforate plastic material, such as polyethylene, but improves these sheets for better back fill control and drainage and for more facile installation which is hampered to a certain extent by the tendency of the stiff sheet to buckle rather than bend. To this end, the invention provides channels on the outer side of the sheet which not only provide bending lines, but also act to channel drainage water from the back fill or from the porous backing if used, without interfering with the air channels on the inner side of the sheet, and by providing means for preventing back fill from falling between the sheet and foundation wall thus further preserving the integrity of the air channels.

These objects are accomplished by providing a protective sheet utilizing such protrusions of various types with ribs which traverse the sheet from the top downwards, protruding inwardly a distance less than the dimple or stud protrusions and forming channels for water seepage externally of the plate. In another instance the ribs traverse the sheet at lower portions thereof from side to side thereby providing for bending of the lower portions around various footing and drainage configurations.

As can be appreciated, the variously formed protrusions for contacting the foundation wall may be utilized including dimples, elongated, spaced and staggered ribs, the latter for stiffening the sheet as well as for providing continuous air channels, or the combination of both dimples and staggered ribs in combination with the channels ribs and the lower transverse bending ribs.

In any event the porous backing may be provided for outer drainage and the simple provision of a strip of porous material, such as fiber glass, along the top edge of the sheet between the sheet and the foundation wall will enhance the performance of the sheet by preventing back fill from falling down between the sheet and wall while at the same time permitting air to exit from between the sheet and the wall.

The invention will be better understood by a reading of the following specification taken in conjunction with the drawings in which:

FIG. 1 is a front plan view of a protective sheet incorporating the invention;

FIG. 2 is a transverse cross sectional view of the sheet shown disposed against a foundation wall;

FIG. 3 is a front plan view of a protective sheet incorporating a modified form of the invention;

FIG. 4 is a rear perspective view showing the protective sheet of FIG. 3 positioned against a foundation wall; and

FIG. 5 is a schematic view of a protective sheet of the invention disposed against a foundation wall in combination with a back fill barricade.

In FIGS. 1 and 2 the stiff imperforate sheet 10 is provided with laterally spaced courses of vertically spaced dimpled protrusions 11, as by any convenient embossing or molding method, and with ribs 12, similarly formed, in between the courses. The ribs 12 protrude in the same direction from the web of the sheet as the protrusions 11 but less so, so as not to interfere with the air spaces and thus the movement of air between the dimples when the sheet 10 is positioned against a foundation wall W.

With particular reference to FIG. 2, it can be seen that the sheet 10 is provided with a porous backing 13, as by spot gluing or the like, to provide good drainage in the back fill.

Inasmuch as the ribs 12 extend from the top edge of the sheet 10 downwardly and are formed as channels on the outer side of the sheet, they will provide passage for the seepage water from the top of the plate 10 and all along the length thereof from the porous material. Where good back fill conditions are present, the use of the porous material may be eliminated, but screening or the like should be provided over the channels to prevent back fill clogging and thus impairment of the channel's functioning.

The ribs 12, also act to provide longitudinal bending areas along the otherwise stiff sheet thus reducing the cumbersomeness of handling such a sheet in that the installer may tack, glue or the like along laterally adjacent areas separated by the ribs without having to "level" the entire sheet, each area acting to level the next upon proper placement.

Referring to FIGS. 3 and 4, a protective sheet 20 also provided with protrusions in the form of dimples 21 is provided with transverse ribs 22 at the lower portion of the sheet 20 to thus provide bending areas for the otherwise stiff sheet so that the bottom of the sheet can be bent over various footing 25 and drainage 26 structures of the lower parts of the foundation wall W as best seen in FIG. 4. Otherwise the sheet would angle away from the wall and would not be properly in place until the back fill pressed it there.

This construction facilitates easy installation, particularly of large sheets where the installer would be holding the sheet about two-thirds of the distance from the bottom and since it is desirable for the portion of the sheet against the foundation to be vertically stiff.

In both embodiments just described, it is noted that the sides of the sheets 10 and 20 may be overlapped for continuous sheet protection of the foundation wall and that in overlapping the sheets, there is an interlocking action between the side edge protrusions of adjacent sheets. Such interlocking is not hindered by either the vertical ribs of the sheet of FIGS. 1 and 2 or the horizontal lower portion ribs of FIGS. 3 and 4 which latter ribs are preferably formed to protrude rearwardly of the web of sheet 20 so that they will not provide a barrier to air movement if disposed near the foundation wall W.

Sheets incorporating the present invention might also be provided, either as an alternative to or between the dimples 21, with staggered and spaced ribs such as shown at 21' in FIG. 3 which, like dimpled protrusion 21 extend toward and about the wall W. Such a configuration of ribs, more fully disclosed in Finnish Pat. No.

3

45158 registered Mar. 10, 1972, will act to provide further vertical stiffness and will act, as do the dimpled protrusions, to provide channels for the movement of air between the sheet and foundation wall.

To further enhance the performance of protective sheets, and with reference to FIG. 5, a sheet 30, upon installation thereof against wall W may be provided at its upper edge with a strip of porous material 31, such as fiber glass, between the forward surface of the top edge and the foundation wall to thereby provide a barrier against back fill D during grading operations and thereafter to preserve the integrity of the air channels and to permit air flow therethrough. Of course the strip 31 may be provided as part of the sheet as by spot gluing.

Further uses and modifications of the invention will occur to those skilled in the art.

What is claimed is:

1. An imperforate sheet made of relatively thin stiff material for protecting foundation walls and the like, and including embossed protrusions on a front side thereof and comprising means for forming air channels between the wall and the sheet, said sheet including embossed ribs formed therein and extending from an edge of said sheet across said sheet and forming on said

4

sheet channels for bending said sheet along the length of said ribs said ribs extending from a top edge of said sheet downwardly, being concave rearwardly and also comprising channel means formed on the back side of said sheet for receiving water from back fill and for draining the same, said ribs protruding forwardly a lesser distance than said protrusions, and a layer of porous material adhering to the back side of said sheet.

2. An imperforate sheet made of relatively thin stiff material for protecting foundation walls and the like, and including embossed protrusions on a front side thereof and comprising means for forming air channels between the wall and the sheet, said sheet including embossed ribs formed therein and extending from an edge of said sheet across said sheet and forming on said sheet channels for bending said sheet along the lengths of said ribs, said ribs extending from a top edge of said sheet downwardly and comprising channel means formed on the back side of said sheet for receiving water externally of said sheet, said ribs protruding forwardly a lesser distance than said protrusions, and a strip of porous material adhering along the top edge of said sheet on the front side thereof.

\* \* \* \* \*

30

35

40

45

50

55

60

65