Jan. 23, 1968 K. GUDDAL 3,364,640

BUILDING STUD

Filed July 9, 1964

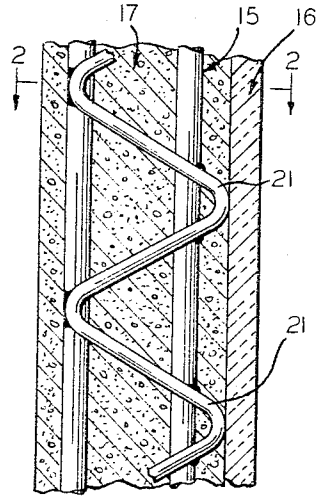


FIG. 1

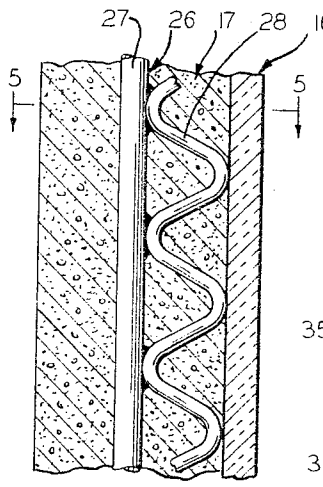


FIG. 4

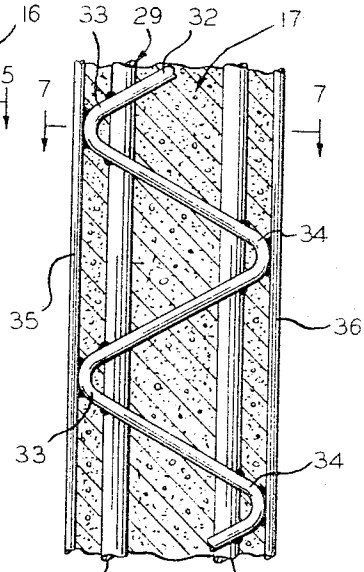


FIG. 6

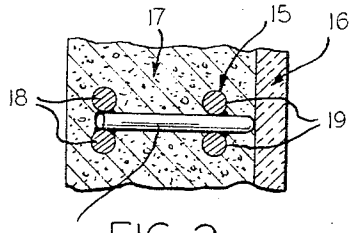


FIG. 2

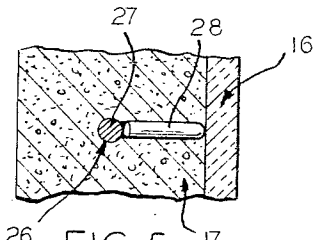


FIG. 5

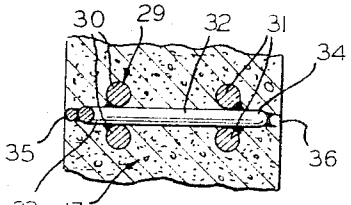


FIG. 7

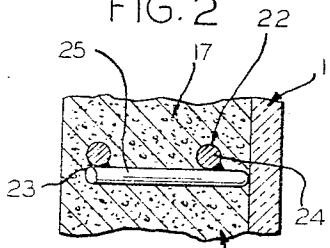


FIG. 3

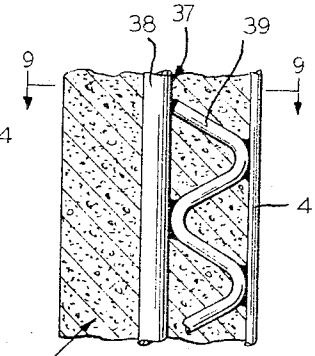


FIG. 8

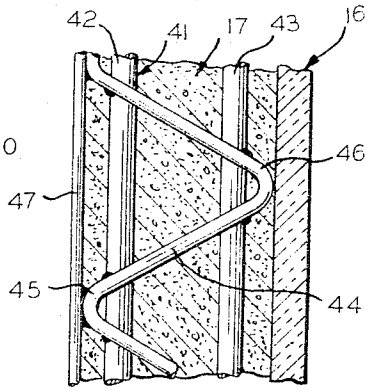


FIG. 10

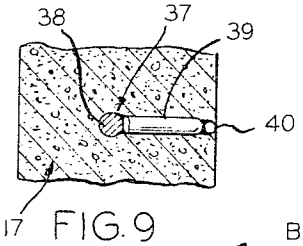


FIG. 9

INVENTOR.
KARL GUDDAL

BY
Marzall, Johnston, Cook & Root
ATTORNEYS

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3,364,640

BUILDING STUD

Karl Guddal, Reger Road, Fairbanks, Alaska 99701

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4 Claims. (Cl. 52—364)

This invention relates in general to a wall construction for a building, and more particularly to a building stud for use in wall construction of a building, and still more particularly to a building stud capable of giving guidance to the construction of a wall.

The building stud of the present invention is especially useful for reinforcing walls primarily constructed of cementitious material including concrete, cement, mortar and the like. Preferably, the building stud is of steel, although it may be of any other suitable material capable of providing suitable reinforcement for cementitious material. It should also be appreciated that while the stud of the present invention will be described and illustrated for wall construction, it could likewise be employed for ceiling or floor construction.

In one embodiment of the invention, reinforcing bar means adapted to be embedded in concrete includes a web or truss means for guiding the placement of a prefinished panel or a panel of insulation so that the bar means is spaced therefrom and can be then completely embedded in the concrete material. It should also be appreciated that the reference to concrete herein is intended to refer to any suitable cementitious material for use in building construction.

In another embodiment of the invention, a screed or border bar may be employed with the web or truss for defining a guide to adjust the thickness of a wall so that the wall may be maintained straight and plumb, and so that uniform thickness can be obtained.

It is therefore an object of the present invention to provide a new and improved building stud for construction of walls for buildings.

Another object of this invention resides in the provision of a building stud for wall construction that is capable of providing a guide for wall thickness and for the placement of a backing panel so that the main reinforcing bars of the stud can be completely embedded in concrete material.

Still another object of this invention is to provide a building stud for wall structures that is capable of giving a wall greater strength and additional fire protection.

A further object of this invention is to provide a building stud for wall construction that is capable of enhancing the construction of the wall when employed with concrete, wherein the stud includes means for guiding the uniform thickness of the wall and to enhance the plumbing of the wall surface.

Other objects, features and advantages of the invention will be apparent from the following detailed disclosure, taken in conjunction with the accompanying sheet of drawing, wherein like reference numerals refer to like parts, in which:

FIG. 1 is a fragmentary vertical sectional view taken through a wall employing a building stud in accordance with the present invention and where reinforcing bars on one side of the stud have been omitted for purposes of clarity;

FIG. 2 is a fragmentary horizontal sectional view of the wall of FIG. 1, taken substantially along lines 2—2 thereof;

FIG. 3 is a horizontal sectional view like that of FIG. 2 but illustrating a modification wherein only a pair of spaced vertical bar members are employed;

FIG. 4 is a fragmentary vertical sectional view of a wall embodying a further modification of the building

stud according to the present invention wherein only a single vertical bar is provided;

FIG. 5 is a fragmentary horizontal sectional view taken substantially along line 5—5 of FIG. 4;

FIG. 6 is a fragmentary vertical sectional view taken through a wall and illustrating a further modified building stud according to the present invention that includes screed or border bars for aiding in the construction of the wall to a uniform thickness and where reinforcing bars on one side of the stud have been omitted for purposes of clarity;

FIG. 7 is a fragmentary horizontal sectional view taken substantially along line 7—7 of FIG. 6;

FIG. 8 is a fragmentary vertical sectional view taken through a wall and is a further modification of a building stud according to the present invention and particularly a modification of the stud shown in FIGS. 6 and 7, wherein only a single vertical member and screed bar is shown;

FIG. 9 is a fragmentary horizontal sectional view taken substantially along line 9—9 of FIG. 8; and

FIG. 10 is a fragmentary vertical sectional view taken through a wall and illustrating a still further modification of the present invention.

Referring now to the drawings, and particularly to FIGS. 1 and 2, a wall is shown including a building stud 15 having a panel 16 at one side wherein the stud is embedded in concrete 17.

The stud 15 includes a pair of inner vertically arranged reinforcing bars 18 in substantially parallel spaced relationship with a pair of outer vertically arranged reinforcing bars 19. A sinuously shaped web 20 extends between the spaced bars 18 and 19 and also between each of the bars 18 and each of the bars 19. The web or truss 20 is suitably secured to the bars 18 such as by welding or the like so that the bars 18 and 19 and the web 20 essentially comprise an integral unit. The web 20 may be of any desired cross-sectional configuration such as circular as shown and is arranged so that the portions thereof secured to the bars 18 do not extend beyond the outer edges thereof, while at the same time the portions secured to the bars 19 are arranged to extend beyond the outer edges thereof to define extensions 21 that serve to space the panel 16 a distance from the bars 19. It can be appreciated that the extension 21 may be made greater or smaller depending upon the distance desired for spacing the panel 16 from the bars 19. The vertical reinforcing bars 18 and 19 may also take any desired cross-sectional configuration although they are shown circular in the present drawings.

The panel 16 may be of insulated material if it is desired to be an outside wall surface or it may be of a prefinished material if it is to be an interior wall surface. Any suitable means (not shown) may be employed for securing the upper and lower ends of the stud 15 in a self-supporting manner prior to the mounting of the panel 16 and the application of the concrete 17. As in conventional wall construction, it will be appreciated that the studs 15 would be spaced along the wall any desired distance in order to obtain the strength of the wall desired and to accommodate the particular sizes of the panel 16. Further, the spacing of the bars 18 and 19 may be adjusted in accordance with the desired thickness of the wall and the reinforcing desired. It should be further appreciated that the concrete 17 may be applied in any suitable manner such as pneumatically or otherwise.

Hence, it can be seen that the bars 19 will be spaced from the panel 16 by means of the spacing extensions 21 so that the bars 19 are completely embedded in the concrete and thereby enhance the overall strength of the wall and provide greater fire resistance. Quite obviously,

the bars 19 can therefore function as better reinforcing members since they are embedded in the concrete 17.

Referring now to FIG. 3, a modified building stud 22 is shown which differs from the stud 15 only in that a single vertically arranged reinforcing bar 23 is provided on one side of the stud and a single vertically arranged reinforcing bar 24 is provided on the other side of the stud, both of which are secured together by means of a web 25. It will be appreciated that any number of vertical bars may be employed in any one building stud.

The embodiment of FIGS. 4 and 5 differs from the previous embodiments only in that the building stud 26 includes a single vertically arranged reinforcing bar 27 having a web 28 secured to one side thereof for spacing the panel 16 from the bar 27. This stud would be employed where a thinner wall structure could be used.

The embodiment of FIGS. 6 and 7 illustrates a building stud 29 having pairs of parallel spaced vertically arranged reinforcing bars 30 and 31 interconnected by a sinuously shaped web or truss 32. In this embodiment, the web 32 includes spacing extensions 33 extending beyond the bars 30 and spacing extensions 34 extending beyond the bars 31. The web 32 is suitably secured to the bars 30 and 31 as in the previous embodiments. Vertically arranged screed or border bars 35 and 36 are suitably secured as by welding or otherwise to the extensions 33 and 34, respectively. Again, the reinforcing bars 30 and 31 are embedded in the concrete 17 and the screed bars 35 and 36 define a guide for the thickness of the concrete and also serve as a guide to keep the inner and outer wall surfaces straight and plumb. Any suitable means may be provided for applying the concrete to the studs, such as by pneumatic application and wherein some lathing may be provided in the center of the wall to initially receive the first layers of concrete.

Referring now to FIGS. 8 and 9, a modification of the stud of FIGS. 6 and 7 is shown wherein the stud, generally indicated by the numeral 37, includes a single vertically arranged reinforcing bar 38 having a sinuously shaped web 39 extending from one side thereof. A screed or border bar 40 is secured to the web 39. In this embodiment, it would not be critical as to the plumbing of the concrete surface on one side but it would be desired to have a guide on the side having the screed bar 40.

Referring now to the embodiment of FIG. 10, a stud 41 is shown which combines the features of the studs of FIGS. 1–5 and the studs of FIGS. 6–9, wherein the stud is capable of providing a guide for the positioning of the paneling 16 on one side and for the guidance of the wall thickness and plumbing on the other side. This stud includes vertically arranged reinforcing bars 42 and 43 interconnected by a web or truss 44 having spacing extensions 45 extending from the bar 42 and spacing extensions 46 extending from the bar 3. The spacing extensions 46 serve to space the paneling 16 from the vertical reinforcing bar 43, while a screed or border bar 47 is suitably secured to the spacing extensions 45 for the purpose of guiding the thickness of the wall and the thickness of the concrete beyond the bar 42.

It should be appreciated in all of the embodiments, the reinforcing bars and webs are suitably interconnected and that where screed bars are provided, they are connected to the webs. Further, while the webs or trusses are illustrated as being sinuously shaped, it should be appreciated that they may take other forms so long as they provide means for interconnecting the spaced reinforcing bars or so long as they provide spacing extensions for spacing the paneling or for having secured thereto screed or border bars.

It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention, but it is understood that this application is to be limited only by the scope of the appended claims.

The invention is hereby claimed as follows:

1. A building stud adapted to be vertically arranged in a concrete wall for reinforcing same, said stud comprising, vertically arranged reinforcing bar means, spacing means secured to one side of said bar means and extending therefrom, and a screed bar secured to said spacing means for guiding the construction of the concrete wall so that said bar means is utimately substantially centrally positioned within the concrete and completely embedded thereby, whereby said screed bar also enhances the making of the wall surface plumb on the corresponding side.

2. A building stud adapted to be vertically arranged in a concrete wall for reinforcing same, said stud comprising, vertically arranged reinforcing bar means, a sinuously shaped web secured to said bar means and extending from one side thereof, and a screed bar secured to said web in parallel relation to said bar means for guiding the construction of the concrete wall so that said bar means is ultimately substantially centrally positioned within the concrete and completely embedded thereby.

3. A building stud adapted to be vertically arranged in a concrete wall for reinforcing same, said stud comprising, a pair of vertically arranged and horizontally spaced reinforcing bars, a web extending between said bars and being secured thereto, spacing extensions extending from opposite sides of said bars, and screed bars secured to the spacing extensions extending parallel to said bars for guiding the construction of the concrete wall so that said bars are ultimately substantially centrally positioned within the concrete and completely embedded thereby.

4. A building stud adapted to be vertically arranged in a concrete wall for reinforcing said wall and having a panel on the side thereof, stud comprising, a pair of vertically arranged and horizontally spaced reinforcing bars, a web extending between said bars and being secured thereto, spacing extensions extending from opposite sides of said bars, said spacing extensions on one side engaging said panel and spacing the adjacent bar therefrom so that it is completely embedded in the concrete, and a screed bar secured to the spacing extensions remote from the panel and being parallel to said bars and for ultimately guiding the construction of the concrete wall so that the adjacent bar is completely embedded in the concrete.

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HENRY C. SUTHERLAND, *Primary Examiner.*

JAMES L. RIDGILL JR., *Examiner.*

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,364,640 January 23, 1968

Karl Guddal

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

In the heading to the printed specification, line 3, for "Reger Road" read -- Peger Road --; column 1, line 13, for "cement, mortar" read -- cement mortar --; column 3, line 54, for "bar 3" read -- bar 43 --; column 4, line 40, for "the side thereof, stud" read -- one side thereof, said stud --.

Signed and sealed this 3rd day of June 1969.

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

William E. Schuyler, Jr.
Commissioner of Patents