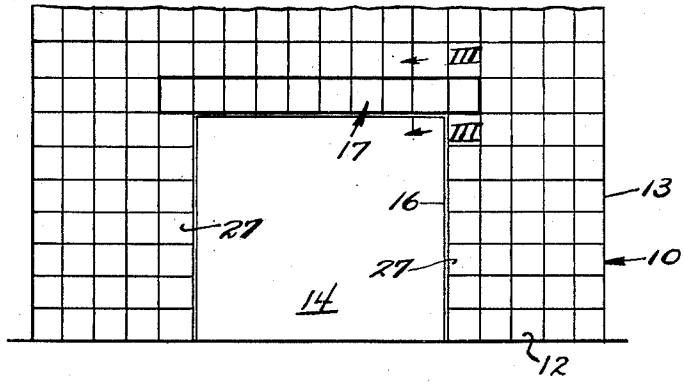
April 22, 1941. P. E. KNUDSEN 2,239,529

LINTEL FOR OPENINGS IN BUILDING WALLS

Filed Sept. 12, 1939

Fig. 1.



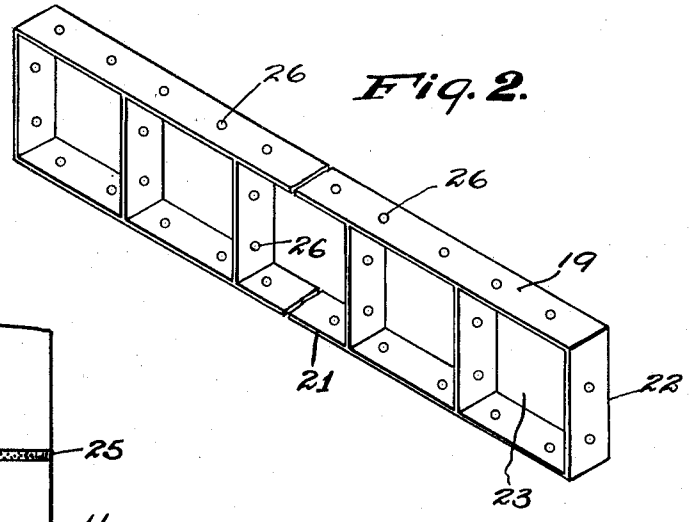


Fig. 2.

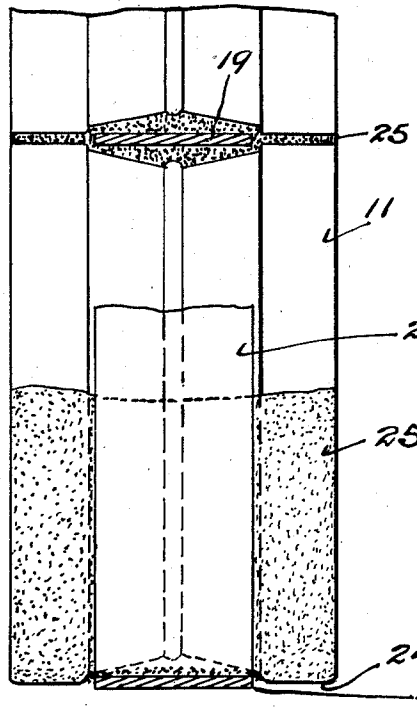


Fig. 3.

INVENTOR
PERCY E. KNUDSEN
BY Olew E. Bee
ATTORNEY

Patented Apr. 22, 1941

2,239,529

UNITED STATES PATENT OFFICE

2,239,529

LINTEL FOR OPENINGS IN BUILDING WALLS

Percy E. Knudsen, Pittsburgh, Pa., assignor to Pittsburgh Corning Corporation, Allegheny County, Pa., a corporation of Pennsylvania

Application September 12, 1939, Serial No. 294,477

3 Claims. (Cl. 72—59)

The present invention relates to the provision of the lintel structures for openings in building walls and it has particular relation to the provision of lintel structures for openings in walls composed of glass blocks or similar units.

One object of the invention is to provide a lintel structure of the foregoing type which is light of weight, inexpensive to manufacture and install and which is in harmony with the remainder of the wall.

A second object is to provide a lintel structure for openings in block walls in which the blocks contiguous to the opening are made to bear a portion of the stresses imposed by the load over the opening.

These and other objects of the invention will be apparent from consideration of the following specification and the appended claims.

In conventional buildings embodying walls of structural blocks, e. g. hollow glass blocks, it is customary to support the blocks immediately above the openings in the wall by means of stiff bars of steel, or other suitable materials. The blocks adjacent to these bars merely rest thereupon and do not reinforce the latter or otherwise assist in sustaining the load from above. It is manifest that the bars in many instances must be of high strength and be able to resist considerable bending loads. To possess these characteristics it is necessary that the bars be relatively massive so that in many instances they are of such size as to stand out prominently in the structure and thus seriously to marr the general motif of a wall composed of blocks of glass or other structural material.

According to the provisions of the present invention it is proposed to provide a lintel structure for openings in walls composed of blocks or glass, or other material which lintel includes a grid-like structure of bars or rods of steel or other suitable materials, the openings which are so proportioned as snugly to receive structural blocks of the same design as those employed in the rest of the wall. By use of such construction the bars constituting the grid structure are substantially concealed in the joints between the blocks and the blocks if properly inserted constitute reinforcements for the grid structure, thus providing a lintel of relatively high resistance to bending loads, but having the same motif as the rest of the wall.

For a better understanding of the invention reference may now be had to the accompanying drawing in which like numerals refer to like parts throughout.

In the drawing Figure 1 illustrates a building wall composed of blocks of glass or other material and having an opening therein which is provided with a lintel constructed in accordance with the present invention.

Figure 2 is an isometric view of a grid structure to be used in the fabrication of lintels embodying the invention.

Figure 3 is a fragmentary sectional view taken substantially upon the line III—III of Fig. 1, but showing certain portions of the grid broken away.

As shown in Figure 1 of the drawing, a wall **10** is composed of units **11**, which preferably are hollow blocks of glass having rectangular vertical sections of conventional design. These blocks may be laid in horizontally aligning courses **12** and vertically aligning columns **13**, and may be bonded together in any convenient manner, for example by means of a mortar or cement, such as Portland cement, or other suitable bonding agent. The fabrication of the wall in these respects is conventional.

An opening **14** in the wall may be provided with a frame **16** for a door, which frame is formed of metal, wood or other suitable material. A lintel structure **17** for the opening includes a grid **18**, shown in Fig. 2 and comprises a plurality (e. g. two) of vertically spaced horizontal bars or rods **19** and **21**, which are joined together at appropriate points by vertical members **22** constituting ties between the bars. It will be appreciated that the ties may be joined to the horizontal bars by welding or by rivets, or in any other convenient manner.

Preferably the spacing between the various parts of the grid is such that the interstices **23** thereof will each just snugly receive a glass block or a plurality of glass blocks. These are of conventional design and are provided with peripheral shoulders **24** defining mortar-receiving grooves about the blocks. In order rigidly to bond the blocks and the grid together and also to provide for the transmission of stresses from the grid structure to the blocks, the edges of the blocks may be coated with layers **25** of mortar or cement (best shown in Fig. 3), which preferably adheres strongly to the glass surfaces. The bars **19** and ties **22** of the grid structure are embedded in the mortar in the grooves between shoulders **24** and if desired openings **26** may be formed in them in such manner as to provide keys uniting the mortar upon opposite faces at appropriate points. These openings may be round, square, oblong or of any other convenient

shapes and may almost completely divide the bars and ties longitudinally, thus interrupting the transmission of heat from one side of a building wall to the other by reason of conduction through the metal comprising the grid.

It will be understood that three or more horizontal, vertically spaced bars may be united by ties so that the structure will receive a plurality of courses of blocks.

In the fabrication of the wall in accordance with the provision of the invention, blocks 11 are laid up to an appropriate height on each side of the opening 14. The grid 18 may then be disposed in position across the opening with its ends resting upon the vertical columns 27, defining the sides of the openings. The glass blocks closing the interstices of the grid structure may be inserted and cemented in place after the grid has been mounted across the opening 14 or if preferred they may be mounted in the grid before the latter is placed in the wall. After the grid has been appropriately mounted, additional blocks may be laid thereupon to any desired height, in order to complete the wall. When the cement about the edges of the blocks in the interstices of the grid has properly hardened it will be apparent that the blocks are firmly bonded in position. The cement also acts as a stress-transmitting medium, which may transmit a considerable proportion of the stress upon the grid structure to the blocks, thus assuring that all portions of the wall are made to assist in bearing the strains imposed thereupon. The grid structure is excellently adapted to carry the tensional loads of the system.

The construction disclosed is light of weight, inexpensive to manufacture and is practically completely concealed in the joints between the blocks in such manner that the general motif of a wall of glass blocks is not marred. At the same time the lintel structure is of great strength and rigidity and is capable of bearing heavy loads without substantial flexure or without subjecting any of the blocks embedded therein to excessive strains.

The use of the grid structure is not limited to lintels for openings; it may also be employed to reinforce the vertical sides of the opening.

The strucure is especially suitable for use with blocks of glass, but the latter may be replaced by tiles, bricks and other structural blocks.

The form of the invention herein shown and described is to be considered merely as exemplary. It will be apparent that numerous modifications may be made therein without departure from the spirit of the invention or the scope of the appended claims.

What I claim is:

1. A building construction embodying a series of structural blocks of rectangular vertical section laid up in vertical columns and horizontal courses to provide a wall, said wall having an opening formed therein and being provided with a lintel for the opening including a grid comprising a pair of spaced parallel bars in horizontal position and of high tensional strength, spaced vertical ties interconnecting the spaced bars and structural blocks inserted in the interstices of the grid, the blocks coacting with and constituting reinforcements to prevent the flexure of the grid, whereby to obtain a lintel harmonizing in appearance with the rest of the wall and having high resistance to flexure, the ends of the grid resting upon and being supported by the columns of blocks constituting the jambs of the opening.

2. A construction as defined in claim 1 in which the structural blocks are hollow and are formed of glass.

3. A construction as defined in claim 1 in which the blocks inserted in the interstices of the grid structure are coated about their edges with the cement rigidly keying the blocks in position and constituting a stress-transmitting medium between the blocks and the grid structure.

PERCY E. KNUDSEN.