Dec. 5, 1961 R. F. DRIGGS 3,011,228

FASTENING DEVICE

Filed Aug. 25, 1955 2 Sheets-Sheet 1

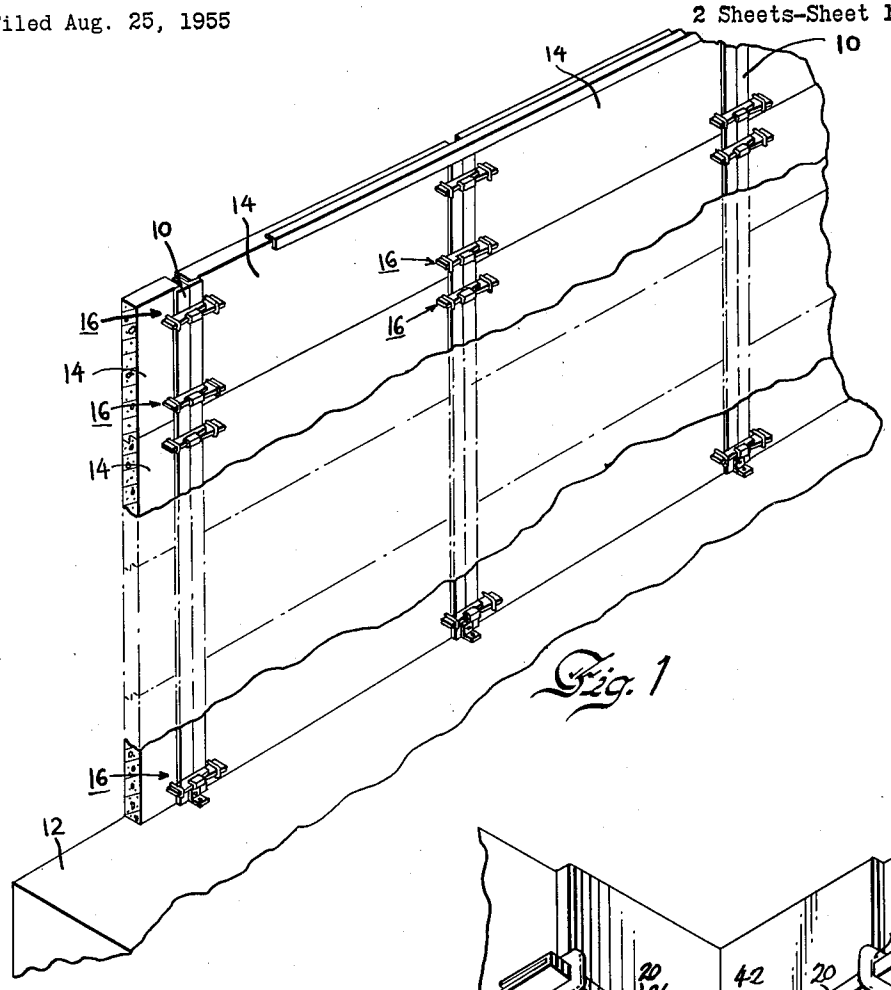


Fig. 1

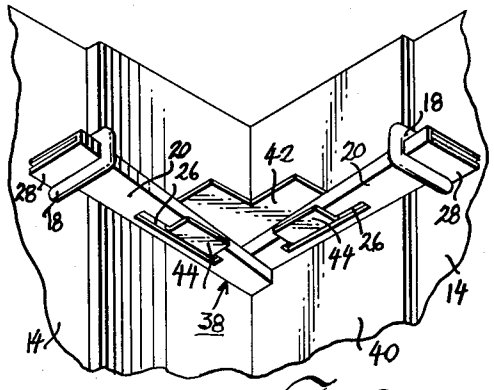


Fig. 9

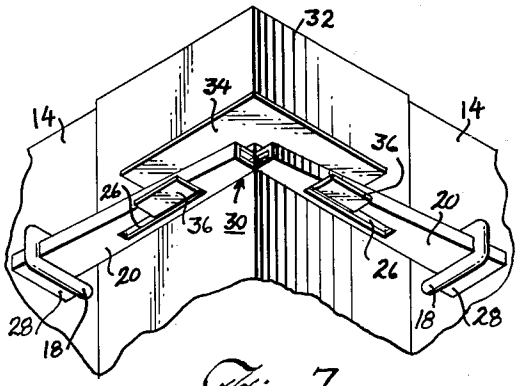


Fig. 7

INVENTOR.
Robert F. Driggs
BY
Dybvig & Jacox
HIS ATTORNEYS

Dec. 5, 1961 R. F. DRIGGS 3,011,228

FASTENING DEVICE

Filed Aug. 25, 1955 2 Sheets-Sheet 2

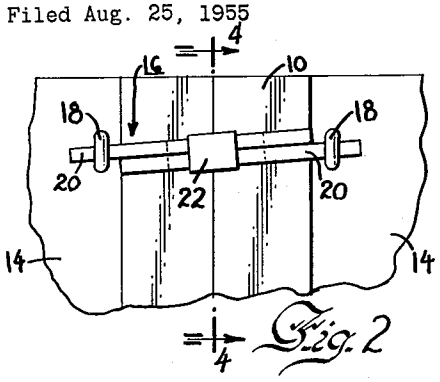


Fig. 2

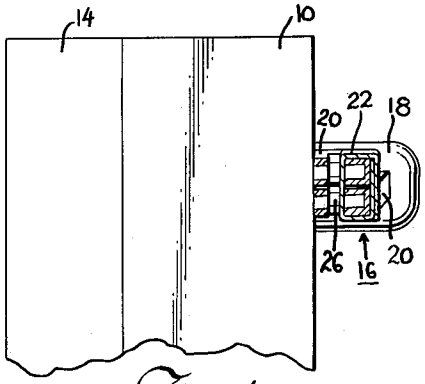


Fig. 4

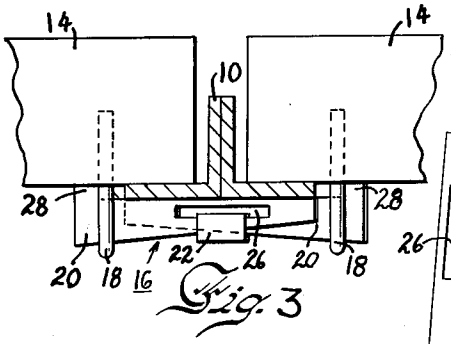


Fig. 3

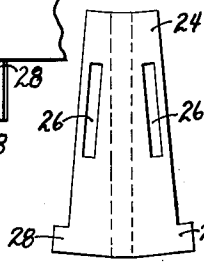


Fig. 5

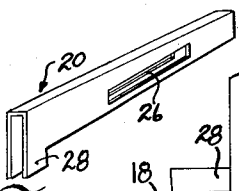


Fig. 6

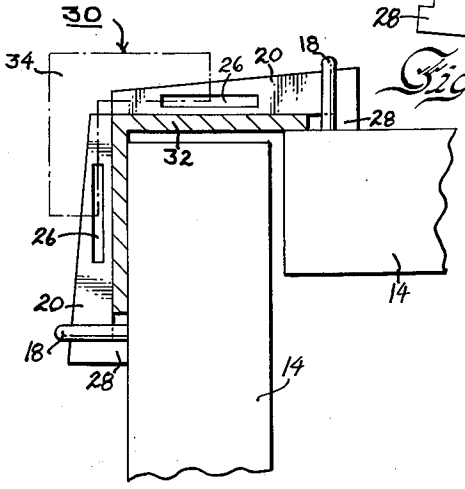


Fig. 8

Fig. 10

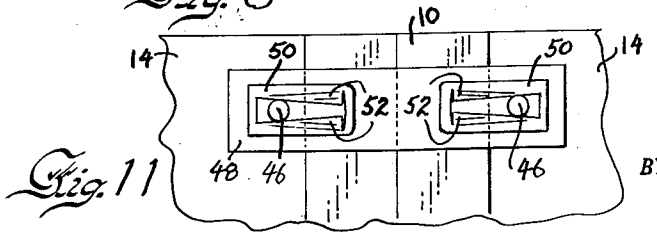


Fig. 11

INVENTOR.
Robert F. Driggs
BY
Dybvig and Jacox
HIS ATTORNEYS

United States Patent Office 3,011,228
Patented Dec. 5, 1961

3,011,228

FASTENING DEVICE

Robert F. Driggs, Pocono Ridge Road,
Brookfield Center, Conn.

Filed Aug. 25, 1955, Ser. No. 530,512
4 Claims. (Cl. 20—92.5)

This invention relates to a fastening device for use in attaching construction blocks or panels to the supporting structure of a building, although not necessarily so limited.

A popular form of building construction combines a steel support structure with construction blocks or panels attached thereto for forming walls, roof decks, ceilings, partitions, load bearing or non-load bearing, and other members of a building. Frequently, the skeletonal support structure or load bearing structure is formed from spaced steel T-beams, that is, beams having a T-shaped cross-section, the spacing between beams corresponding to the length of the construction panels. The construction panels are placed between and secured to successive T-beams to provide wall, floor, roof, and ceiling surfaces.

An object of this invention is to provide a fastening device for securing construction panels to the support structure for a building, which device permits rapid assembly of the building.

Another object of this invention is to provide a fastening device which is readily adaptable for use in securing construction panels to both corners and straight portions of a support structure.

Another object of this invention is to provide a fastening device for use in assembling construction panels which device draws the construction panels tightly against a supporting beam, thereby making the housing weatherproof and vermin proof.

A further object of this invention is to provide a fastening device capable of holding a construction panel to a support during violent wind storms and the like, yet enabling slight movement of the panel to adjust for flexure of the support structure under these conditions.

Other objects and advantages reside in the construction of parts, the combination thereof and the mode of operation, as will become more apparent from the following description.

In the drawings, FIGURE 1 is a sectional perspective view of a fastening device of this invention applied to a wall assembly.

FIGURE 2 is an enlarged fragmentary front elevational view of the fastening device.

FIGURE 3 is an enlarged fragmentary top plan view of the fastening device with parts shown in section.

FIGURE 4 is a sectional view taken substantially along the line 4—4 of FIGURE 2.

FIGURE 5 is an enlarged top plan view of a plate used to form a wedge employed in the fastening device.

FIGURE 6 is an enlarged perspective view of the wedge.

FIGURE 7 is an enlarged fragmentary perspective view of a modification.

FIGURE 8 is an enlarged fragmentary top plan view of the modification with parts shown in section.

FIGURE 9 is a fragmentary perspective view of a second modification.

FIGURE 10 is a fragmentary top plan view of the second modification with parts shown in section.

FIGURE 11 is a fragmentary front elevational view of a third modification.

Referring to the drawings in detail, FIGURE 1 shows a wall structure including spaced upright steel T-beams **10** projecting from a foundation **12** and layers of construction panels **14** filling the gaps between successive beams **10**. The beams **10** comprise a pair of angle irons joined together to form a beam having a T-shaped cross-section. The beams **10** are attached to the foundation **12** in a suitable manner so that the leg of the T-section is directed to the outside of the wall structure.

Adjoining layers of construction panels **14** are interlocked to provide a weather tight mortarless wall surface. The construction panel **14** may be concrete, metal, stone, or any other suitable material. The construction panel may also be a window casing adapted for use with the fastener of this invention. The dimensions of the panel or window **14** depend on construction requirements, a surface area 2 feet by 4 feet being a typical dimension. Each construction panel **14** is drawn tightly against the two upright beams **10** by means of the novel fastening device of this invention, shown generally at **16**.

The fastening device **16** shown in enlarged detail in FIGURES 2, 3, and 4, comprises two studs **18**, one stud being embedded in each of two adjacent construction panels **14**, a pair of wedge members **20**, and a clasp **22**. The studs **18** are preferably embedded in the construction panels during manufacture of the panel. There may be a plurality of studs **18** in each construction panel **14**, the actual number of studs used being dependent upon the size of the construction panel and the structural requirements of the building.

Each wedge member **20** is formed from a die cut plate **24** by folding the plate **24** along the broken lines indicated in FIGURE 5. As shown in FIGURE 6, the member **20** has a pair of longitudinal aligned slots **26** extending partially the length of the member. A pair of projections **28** extend from the larger end of the wedge member, the length of the projections being substantially equal to the thickness of the T-beam sections.

In assembling the fastening device **16**, the construction panels **14** are positioned on either side of the T-beam **10** with the studs **18** aligned in a horizontal plane. One wedge member **20** is driven through each of the two studs **18**, the smaller end of each wedge member advancing toward the beam **10** to abut the flat side thereof and the projection **28** abutting the construction panel **14**. As shown in FIGURE 2, the wedge members **20** are driven in at a slight angle with respect to the horizontal plane so that the smaller ends of the wedge members may traverse the T-beam **10** in adjacent positions.

With the wedge members **20** driven into position, the slots **26** in each wedge member **20** are in alignment so that the clasp **22** may be projected through the slots **26** and wrapped around both wedge members **20** so as to tie the two wedge members **20** together. The shape of the clasp **22** is unimportant. It may be initially rectangular, as indicated in FIGURES 2, 3, or 4, or triangular or any other suitable shape. As will be shown later, the shape of the clasp **22** can be varied to suit special requirements.

It is apparent that in assembling the fastening device **16**, two functions are performed. Each construction panel **14** is (1), drawn tightly against the T-beam **10** and (2), the two panels on either side of the T-beams are fastened together. In this manner, a strong, weather tight wall can be rapidly assembled with the wedge members providing a slidable bond between the construction panels enabling some movement of the panels in the event the wall is flexed by external forces such as wind storms. The fastening devices **16** being located on the inside surface of the wall may be covered with any of a wide variety of interior wall coverings.

The fastening device of this invention may be readily modified to meet special construction needs. For example, FIGURES 7 and 8 show a modified fastening device **30** for making an inside corner. In this application, the end of one construction panel **14** abuts the side of another construction panel **14** forming a corner which is capped with an angle iron **32** having an L-shaped cross-section.

The wedge members 20 are driven in place through studs 18 projecting from the panels 14. In this case, however, the wedge members are mutually perpendicular and a modified clasp 34 is used to tie the wedge member 20 together. As illustrated in FIGURES 7 and 8, the clasp 34 is L-shaped and has a flange 36 extending from the inner edge of each leg. The flanges 36 are projected through the slots 26 in each wedge member 20, each flange being bent around its respective wedge member to thereby tie the wedge members together.

The fastening device of this invention may be also modified to obtain a fastening device 38 for outside corners as shown in FIGURES 9 and 10. In this application, the end of one construction panel 14 abuts the side of another construction panel 14 forming a corner which is lined with an upright beam 40 having an L-shaped cross-section. The wedge members 20 are driven in place, through the studs 18 projecting from the panels 14. As in the previous modification, the wedge members 20 are mutually perpendicular and require a modified clasp 42. The clasp 42 is L-shaped and has a flange 44 extending from the outer edge of each leg thereof. The flanges 44 are projected through the slots 26 in each wedge member 20, each flange being bent around its respective wedge member to thereby tie the wedge members 20 together.

In another modification, shown in FIGURE 11, the U-shaped studs are replaced by cylindrical studs 46 projecting from each construction panel 14. The construction panels 14 are positioned about the T-beam 10 as before, then a plate 48 having a pair of holes (not shown) in alignment with the studs 46 is seated against the T-beam 10 so that the studs 46 project through the holes in the plate 48.

Commercial wedge shaped speed nuts 50 are used to engage the studs 46 and draw the construction panels 14 against the T-beam 10. The speed nuts 50 each have a pair of inwardly directed mutually convergent tongues 52 which engage the studs 46. The tongues 52 diverge from the plane of the plate 48 as they converge mutually, so that if the speed nuts 50 are driven laterally away from each other as viewed in FIGURE 11, the studs 46 will be drawn through the plate 48, thereby drawing the construction panels 14 up to the T-beam 10.

This last modification can be further modified for constructing inside and outside corners by bending the plate 48 so that it has an L-shaped cross-section.

It is to be noted that the function of the wedge member 20 and the speed nut 50 is analogous in each modification. That is, both elements (1) slidably engage the studs projecting from the construction panels and (2) when driven laterally parallel to the wall surface, drive the stud in a direction normal to the wall surface so as to draw the construction panels tightly against the support beam.

Throughout this description, the fastening device has been associated with wall construction; however, the device is equally suitable for assembly of floors, ceilings, roofs, and so on.

The various parts of the fastening device may be constructed from iron, steel, aluminum alloy, or any other suitable material, there being no requirement that each part of the fastening device be of the same material. For example, the wedge members and studs may be fabricated from a relatively strong material such as steel and the clasps may be made of a malleable material such as iron or aluminum.

Although the preferred embodiment of the device has been described, it will be understood that within the purview of this invention various changes may be made in the form, details, proportion and arrangement of parts, the combination thereof and mode of operation, which generally stated consist in a device capable of carrying out the objects set forth, as disclosed and defined in the appended claims.

Having thus described my invention, I claim:

1. A fastening device for securing two angularly disposed construction panels to an intermediate support beam having a pair of angularly disposed flanges, there being one of said flanges abutting each construction panel, said fastening device comprising a pair of U-shaped studs, one stud projecting from each construction panel, a pair of wedge members slidably extending through said studs and abutting the flanges on the side opposite the construction panel, and clasp means engageable with said wedge members to tie the wedge members together.

2. A fastening device for securing a pair of construction panels to a support beam, said panels being positioned in end to end relation with said support beam disposed therebetween, said support beam having a pair of flanges projecting oppositely therefrom, there being one flange projecting parallel to each construction panel in abutment with one face thereof, said fastening device comprising a pair of U-shaped studs, there being one stud partially embedded in each construction panel adjacent the abutting flange of said support beam, a pair of wedge members, there being one wedge member extending slidably through each said stud and projecting over the adjacent flange of said support beam, said wedge members projecting one toward the other, and a clasp interconnecting said wedge members to prevent their separation one from the other.

3. The fastening device according to claim 2 wherein each said wedge member is provided with a slot passing therethrough, said clasp having portions projecting into the slots of said wedge members for engagement therewith.

4. A fastening device for securing two construction panels to a support beam therebetween, said beam having a pair of flanges extending therefrom, each construction panel abutting one side of one of said flanges, said fastening device abutting the opposite sides of said flanges and comprising a pair of U-shaped studs, one stud projecting from each construction panel, a pair of wedge members extending slidably through each U-shaped stud and abutting the sides of said flanges, each wedge member having a slot therein, and a clasp member having a portion extending in the slot in each wedge member to thereby engage and bind together both wedge members.

References Cited in the file of this patent

UNITED STATES PATENTS

1,076,838	Okus	Oct. 28, 1913
1,202,640	Ahlander	Oct. 24, 1916
1,506,442	O'Hara	Aug. 26, 1924
1,778,315	Ferguson	Oct. 14, 1930
1,919,780	Fairbank	July 25, 1933
2,150,809	Rugg et al.	Mar. 14, 1939
2,188,400	Bosco	Jan. 30, 1940
2,271,584	Fellom	Feb. 3, 1942
2,332,705	Fellom	Oct. 26, 1943
2,461,648	Macleod	Feb. 15, 1949
2,526,529	Arrighini et al.	Oct. 17, 1950
2,620,248	Mutchnik	Dec. 2, 1952
2,673,775	Silverman	Mar. 30, 1954