Sept. 12, 1944. J. E. BRONNER 2,358,209

SPACING, BRACING, RETAINING AND CLAMPING DEVICE

Original Filed July 1, 1940

Fig. 1.

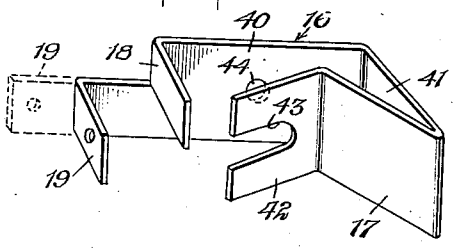



Fig. 2.

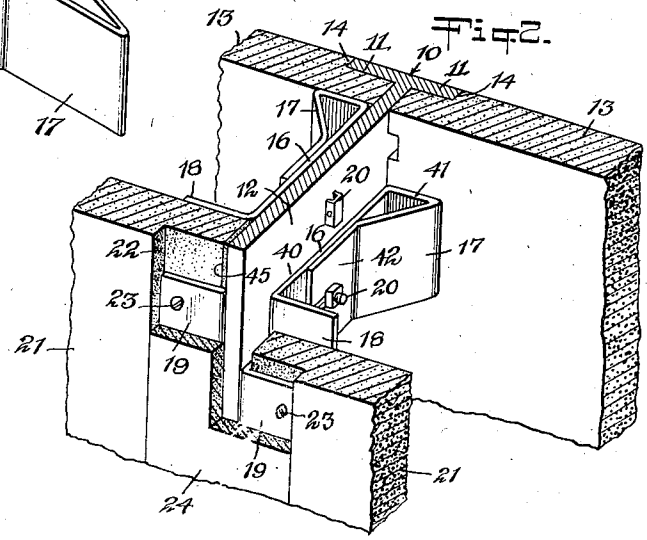



Fig. 3.

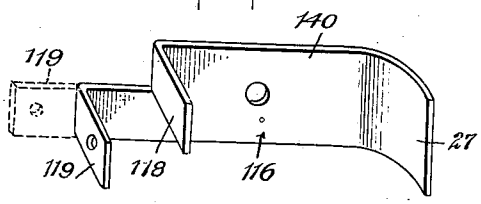
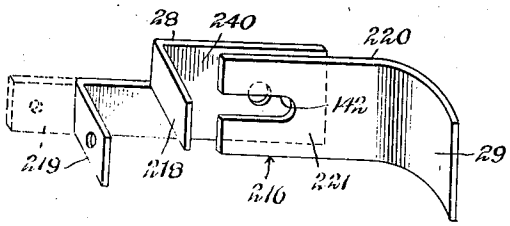



Fig. 4.




WITNESSES

George Naylor

Chris Feinle.

INVENTOR

James E. Bronner

BY

Munn, Liddy & Glascum

ATTORNEYS

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# UNITED STATES PATENT OFFICE

2,358,209

## SPACING, BRACING, RETAINING, AND CLAMPING DEVICE

James E. Bronner, Eltingville, Staten Island, N. Y.

Original application July 1, 1940, Serial No. 343,365. Divided and this application March 2, 1943, Serial No. 477,722

3 Claims. (Cl. 72—118)

This invention relates to a device which is useful in wall construction of structures having double walls with a uniform air space and involving such members as the flanged uprights and associated parts such as beams, joists, braces, rafters and the like, for the purpose of maintaining components of the walls in place.

More particularly the device serves as a spacer, brace, retainer and clamp in conjunction with other constituents of a well assembly construction disclosed in my Patent No. 2,316,668, and is a division of the subject matter of said patent.

The principal object of the invention is the provision of a device of the indicated character whereby a frame may be readily completed to form a sturdy and rigid assembly before the application of the walls' panels or elements and to incorporate the latter in such manner that a building may be constructed economically and expeditiously.

The nature of the invention and its distinguishing features and advantages will appear when the following specification is read in conjunction with the accompanying drawing, in which,

Figure 1 is a perspective view of a device constructed in accordance with the invention.

Figure 2 is a perspective horizontal section showing the device in use by way of example.

Figure 3 is a perspective view of a modification of the device.

Figure 4 is a perspective view of a further modification of the device.

On reference to Figure 1 it will be apparent a device 16 constructed in accordance with the invention is cut, bent and formed from a single piece of sheet material, such as sheet steel or other material having inherent springiness, to provide portions 40, 41, 17, 42, 18 and 19 respectively. The portion 40 serves as a spacing means. One end of the portion 41 is integral with one end of the portion 40, and one end of the portion 17 is integral with the other end of the portion 41 disposed at an acute angle with respect thereto, and the other end of the portion 17 is integral with one end of the portion 42. This portion 42 is disposed to lie or bear against the intermediate portion 40. The portion 42 has a slot 43 and the portion 40 has a hole 44 for a purpose to appear.

The portions 41, 17 and 42 serve as a brace as well as a pressure exerting means or clamp in conjunction with structural members to be retained or secured in place. Accordingly, the portion 41 is preformed to an angle of 105°, or the angle may be more or less, with respect to the portion 40 in order to exert clamping pressure when the device is secured in place for the intended purpose. The portion 18 is preformed to a substantially ninety-degree angle with respect to the portion 40, whereas the portion 19 is normally in the plane of the portion 40, as shown in dotted lines in Figure 1.

On reference to Figure 2 there is shown a building construction of assembled parts including an upright 10, T-shape in cross section, providing a flange 11 on a web 12. The web 12 is disposed between the ends of outside wall panel 13, each of which is rabbetted as at 14 to receive one of the flanges 11. Panels 21 are arranged in spaced parallel relation to the panels 13 and the web 12 is disposed between the ends of the panels 21 in contact therewith as in the case of the panels 13. Each panel 21 is rabbetted as at 22.

Use is made of the required number of devices 16, each of which serves as a spacer, brace, retainer and clamp in conjunction with the upright 10, the outside panels 13 and inside panels 21.

This is accomplished by the use of a toggle-bolt 20 for each device. The bolt extends through a hole in the web 12, hole 44 in the portion 40, and the slot 43. The bolt 20 not only holds the device 16 in place but also holds the portion 42 against the portion 40 with the portion 41 bearing on the outside panel 13, which has been previously put in place. A panel 21 is set in place and is engaged on the outside face by the portion 18 and the portion 19 is then bent to a ninety-degree angle with respect to the portion 40 into engagement with end face and inside rabbetted face of the panel 21. A screw 23 extending through the portion 19, which has a hole for that purpose, and driven into the panel firmly holds the inner end of the device 16. A grout 45 is filled in the remaining space between the panel end and the web 12. A filler 24 of the same material as the panel 21 is applied within the rabbet 22 after the assembly of the parts has been effected. Thus the inside surface of a wall formed by numerous panels will be brought to a smooth finish to receive paint or other suitable coating to give the desired decorative effect without the use of lathing or plastering.

It is to be understood that the number of device 16 used depends upon the number and size of the panels, and that said devices are arranged on opposite sides of the webs 12 at intervals in staggered relation. This enables the outside and

inside panels of one bay to be detached independently of the adjoining panels.

In Figure 3 there is shown a modified form of device, the same being designated 116. This device is cut, bent and formed from a single piece of material herein specified, to provide a portion 140 which serves as a spacing means, an arcuate end portion 27 in continuation of the portion 140, and portions 118 and 119. The portion 27 has the same function as the portion 41, and the portions 118 and 119 have the functions of the portions 18 and 19 respectively of the device 16, and accomplish the same result in use.

In Figure 4 there is shown a further modification of the device having all of the advantages of the device 16, and the further advantage that it is adjustable as to length. The device 216 shown in Figure 4 is of two parts, a part 28 having a portion 240 and integral portions 218 and 219, and a second part 220 consisting of a straight portion 221 and an arcuate portion 29 in continuation of the portion 221. The portion 221 has a slot 142 therein. The device 216 being made up of parts 28 and 220 is adjustable as to length. The part 28 is preferably spot-welded or otherwise secured to the web 12 and the part 220 is secured by a toggle-bolt 20 extending through the web 12, the portion 240 and through the slot 142. By virtue of the portion 29, the device 216 will exert spring pressure on the related outside panel 13. It is understood that the portions 218 and 219 serve to firmly hold the related inside panel 21.

I claim:

1. A device adapted to be fixedly secured to framework for spacing, bracing and retaining structural members in cooperation with said framework, said device being constructed to provide an intermediate spacer portion, means on one end of said portion to engage one structural member, and means on the opposite end of said portion to exert spring clamping pressure on a second structural member for bracing and retaining said members in position in spaced relation to each other, said last means consisting of angularly disposed portions one of which has a slot, and said intermediate portion having provision for accommodating a fastener element to secure the device in place and to enable the fastener element to extend in said slot to hold said angularly disposed portions adjusted to a desired clamping pressure.

2. A device adapted to be fixedly secured to framework for spacing, bracing and retaining structural members in cooperation with said framework, said device being constructed to provide an intermediate spacer portion, means on one end of said portion to engage one structural member, and means on the opposite end of said portion to exert spring clamping pressure on a second structural member for bracing and retaining said members in position in spaced relation to each other, said last means consisting of a laterally disposed resilient clamping portion one end of which is integral with said intermediate portion, and said clamping portion being bent to provide an extension adapted to bear against said intermediate portion, said intermediate portion having provision for accommodating a fastener element to secure the device in place, and to enable the fastener element to engage said extension to hold it in contact with the intermediate portion.

3. A device adapted to be fixedly secured to framework for spacing, bracing and retaining wall panels of outside and inside walls in cooperation with said framework, said device being cut, bent and formed from a single piece of sheet metal to provide an intermediate spacer portion, clamping means integral with one end of said spacer portion consisting of a springy panel-engaging portion normally disposed at an angle greater than a right angle with respect to said spacer portion, a bracing portion integral with the free end of said panel-engaging portion and disposed at an acute angle with respect thereto, and a slotted portion in continuation of said bracing portion; and panel-engaging means in continuation of the remaining end of said spacer portion.

JAMES E. BRONNER.