R. C. ROWAN.

SECTIONAL BUILDING.

APPLICATION FILED OCT. 9, 1918.

1,340,561. Patented May 18, 1920.

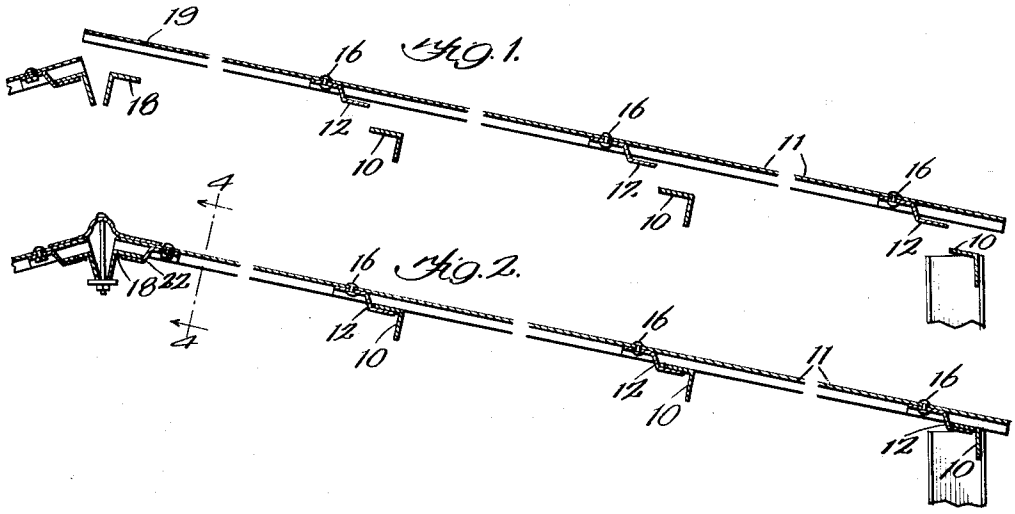


Fig. 1.

Fig. 2.

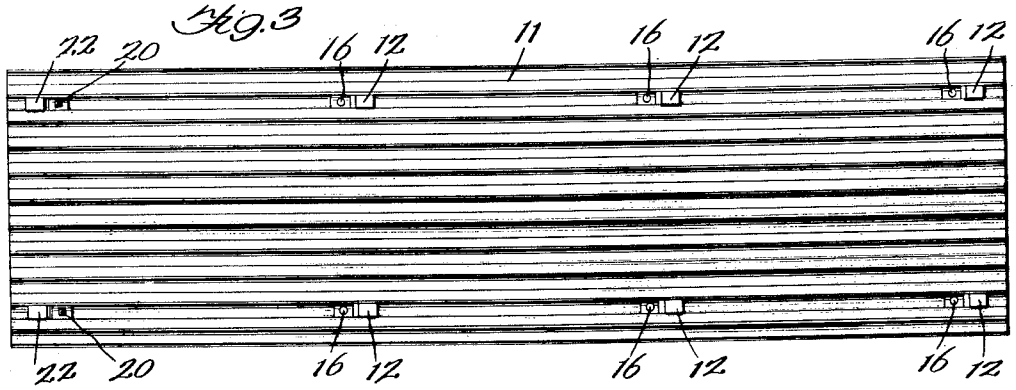


Fig. 3

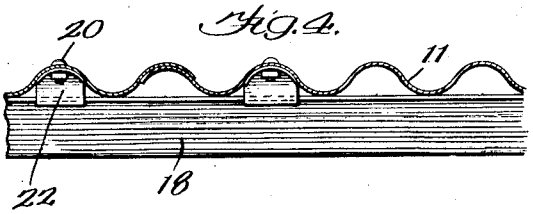
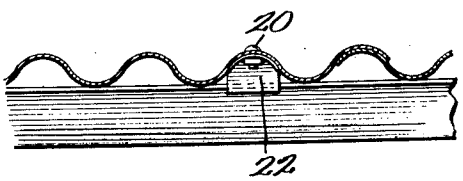


Fig. 4.



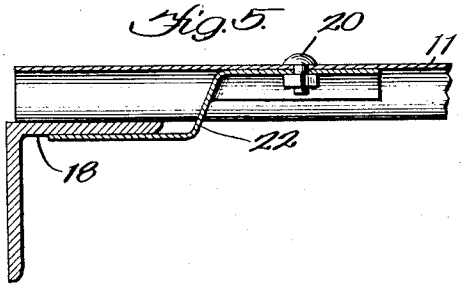


Fig. 5.

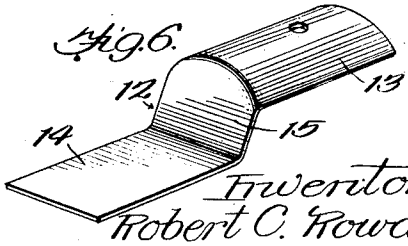


Fig. 6.

Inventor:
Robert C. Rowan.
By Cheever & Cox
Attys.

UNITED STATES PATENT OFFICE.

ROBERT C. ROWAN, OF WHEATON, ILLINOIS, ASSIGNOR TO STEEL FABRICATING COMPANY, OF CHICAGO HEIGHTS, ILLINOIS, A CORPORATION OF ILLINOIS.

SECTIONAL BUILDING.

1,340,561. Specification of Letters Patent. Patented May 18, 1920.

Application filed October 9, 1918. Serial No. 257,436.

To all whom it may concern:

Be it known that I, ROBERT C. ROWAN, a citizen of the United States, residing at Wheaton, in the county of Dupage and State of Illinois, have invented a certain new and useful Improvement in Sectional Buildings, of which the following is a specification.

Modern conditions have developed a demand for fabricated buildings. They are used principally for industrial and commercial purposes and may be of wood, metal or concrete or a combination of these materials. My invention has to deal with buildings having metal roof sheets or metal side sheets or both. The object of the invention is to provide a construction by which a maximum of security and durability will be combined with a minimum of skill and labor at the point of erection. In other words, it is my purpose to obtain a construction which will render shop facilities and the experience of the shop employees available to the greatest possible extent, and reduce to a minimum the amount of labor and experience required to erect the building at the distant point of erection. According to my invention the building embraces trusses mounted on posts. The roof and side walls are of sheet metal—usually corrugated. Adjacent trusses and posts are connected by frame members which when located in the side walls have no particular name but when located in the roof are commonly termed "purlins." These are arranged horizontally and usually consist of angle bars. The trusses are completed at the factory and the posts and purlins are likewise cut to proper length and the bolt holes punched. These parts are shipped unassembled, as are also the sheets which are to form the roof and sides. My problem has been concerned chiefly with the securing of the sheets to the rest of the building.

To bolt the sheets to the framework at the point of erection has the advantages of requiring little skill on the part of the erector and no tools but a wrench, supplemented at times by a drift pin to bring the holes into register; but there are two objections to this expedient, first, too many bolts are required and too much time would be consumed, especially under adverse weather condition; second, where so many small bolts are used there is danger that some of them will work loose. The dimensions of the sheets vary, but they are commonly of considerable size and good practice usually requires that each sheet be secured at eight different points. My solution of the problem is illustrated in the accompanying drawings in which—

Figure 1 is a vertical sectional view of a roof, taken longitudinally thereof, and showing the relative positions of the fastening devices.

Fig. 2 is a view similar to Fig. 1 but showing the parts in final position, assembled.

Fig. 3 is a face view of the inside of a sheet having the fastening devices in place.

Fig. 4 is a sectional view on the line 4—4, Fig. 2, the parts being shown on a larger scale.

Fig. 5 shows, on a still larger scale, the relative positions of the parts at the upper edge of the sheet, the view being taken longitudinally through a fastening clip, and

Fig. 6 is a perspective view of the preferred form of clip.

Similar numerals refer to similar views throughout the several views.

The principle of fastening the side sheets is the same as that used for fastening the roof sheets. For the sake of clearness I have omitted the trusses, and have shown merely the purlins, which in the actual structure are supported thereby. Each sheet is supported by four purlins, extending horizontally. The three lowermost have flanges 10, 10 which face upward. The sheet 11, which is here shown as being of corrugated metal, is provided with six clips 12, 12, the free ends whereof extend downward to engage the upward extending flanges of the purlins. The clip is clearly shown in perspective in Fig. 6 and does not require detailed description, except to say that it has two legs 13 and 14 connected by a central portion 15, so arranged that the legs are offset from each other. The leg 13 is here shown to be rounded to fit the corrugation of the sheet. The free leg 14 of the clip stands away from the sheet as shown and engages the upper flange of the purlin. These six clips are permanently fastened to the inside of the sheet by any suitable means. The process of spot-welding is well adapted for the purpose, although in the present case I have illustrated the use of rivets 16. Both spot-welding and riveting are appropriate shop methods and they afford greater security than can ordinarily be obtained from bolts or nuts. The fourth purlin for the

sheet, shown at the left end of Figs. 1 and 2, is similar to the others except that its acting flange 18 faces downward instead of upward. A pair of holes 19 are punched near the upper edge of the sheet for receiving bolts 20 by which the clips 22 may be fastened. In other words, in my building I place the three lower purlins for each sheet with their acting flanges facing upward and the fourth with its acting flange facing downward; and I fasten, (preferably permanently) three pairs of clips to the sheet in position to engage these acting flanges of the purlins, and I so punch the sheet that when the fourth pair of clips is positioned, their free legs may engage the acting flanges of the fourth purlin.

When the parts arrive at the point of erection and the purlins are made fast, three of the purlins for any given sheet serve to carry the entire weight of the sheet. That is to say, the weight of the sheet is carried chiefly, if not entirely, by the clips which have been permanently secured to it at the factory. The advantages will be evident. All the erector has to do is to adjust the sheet with its three sets of clips to the three corresponding purlins. So far as weight carrying goes the process is completed by the mere adjusting of the sheets and clips to the purlins. All that is left for the erector to do is to apply the final pair of clips 22, these being placed with their free legs upward and secured by means of the bolts 20. A single bolt has been found sufficient for each clip, especially when corrugated metal is employed, and particularly so when my special form of clip is used. Thus it will be seen that out of eight clips the only two which must be applied by the erector are the two which serve to "lock" the sheet in place, so to speak. This final set of clips is not called upon to carry the weight of the sheet, but chiefly to hold the permanent clips in engagement with their respective purlins. Thus the weight is carried by the clips that have the benefit of shop methods and shop inspection while the detachable clips do not perform any weight carrying function, the result being that it is less important as to the manner and thoroughness with which the last two clips are fastened.

From the foregoing it will be clear that as a result of my construction and arrangement the number of parts is not increased nor is the structure in any way rendered more complicated, and yet three-fourths of the work of securing the clips may be done at the factory and the work which is done at the factory carries the entire load so far as supporting the weight of the sheet is concerned. The side sheets which form the walls and ends of the building are fastened upon the same principle, the upward facing flanges of the horizontal frame members or purlins in this case extending vertically upward, instead of obliquely upward as in the case of the roof structure.

Having thus described my invention what I claim as new and desire to secure by Letters Patent, is:—

1. A knock-down building having external sheets, supports for said sheets having upward and downward facing flanges, and clips on the inside of said sheets, some of the clips facing downward to attach the sheets to the supports and also carry the weight of the sheets, and each sheet also having a detachable, upward facing clip adapted to engage a downward facing flange for securing that portion of the sheet to the support and also locking the other clips of the sheet in engagement with their respective flanges.

2. A structure, as specified in claim 1, in which there is a plural number of downward facing clips and these are permanently fastened to the sheets, whereby the only work that need be done in the field is the attaching of the detachable clips.

3. A knock-down building having external sheets internally provided with oppositely facing clips, one of which is detachable, and rigid supporting members for said sheets, said members being provided with oppositely facing flanges, the flanges of the members being adapted for registration and coöperation with the clips on the sheet, whereby the weight of the sheet is carried by the members, and a locking engagement of the members and sheets is effected by cooperation of the flange and detachable clip.

4. The improvement in the art of fabricating and assembling knock-down building structures, which consists in making external sheets which are internally provided with fixed clips and a detachable locking clip, fabricating supports for said sheets provided with flanges adapted for registration and coöperation with said clips, and with a flange adapted for registration and coöperating with said detachable clip, placing said flanges and fixed clips in mutually coöperative relation, and finally fixing the detachable clip in coöperative relation with one of said flanges, substantially as described.

In witness whereof I have hereunto subscribed my name.

ROBERT C. ROWAN.