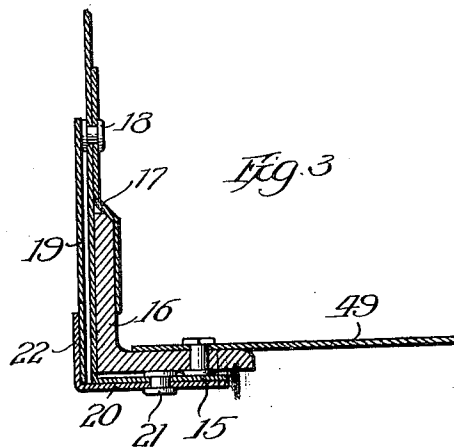
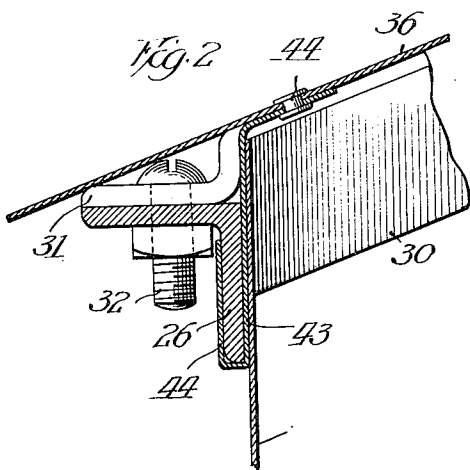
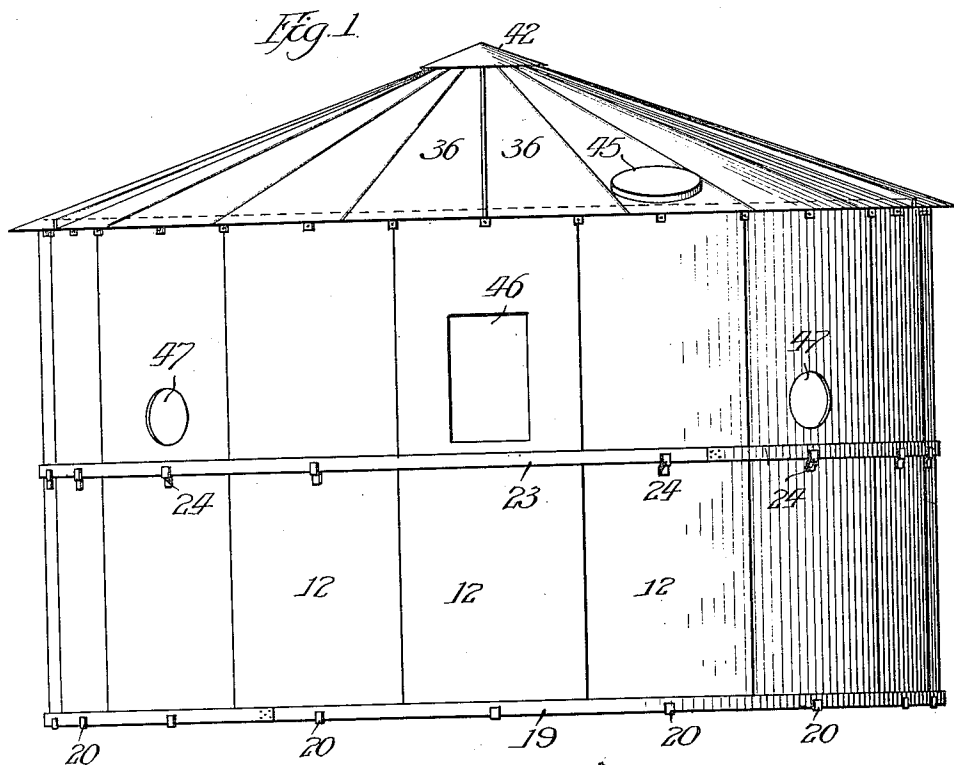


1,060,745.

3 SHEETS—SHEET 1.



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METALLIC BUILDING CONSTRUCTION.
APPLICATION FILED APR. 26, 1911.

1,060,745.

Patented May 6, 1913.
3 SHEETS—SHEET 2.

Fig. 4

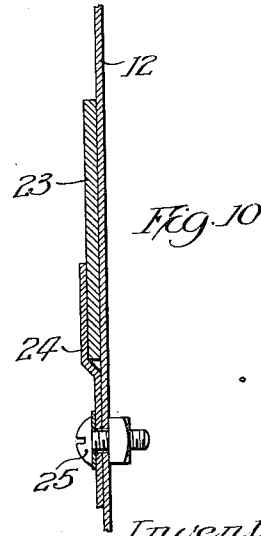
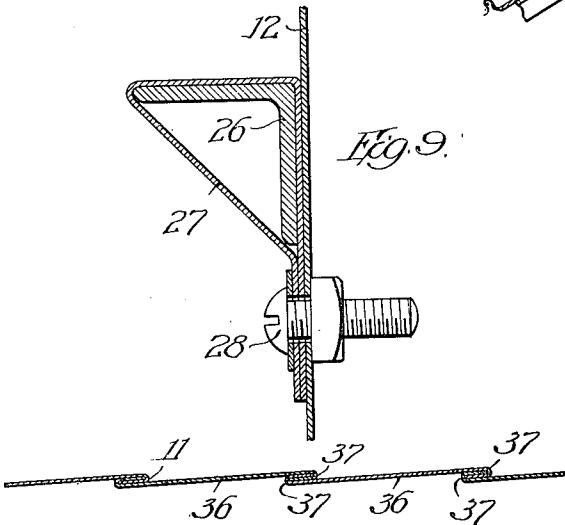
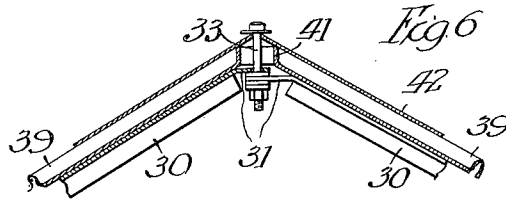
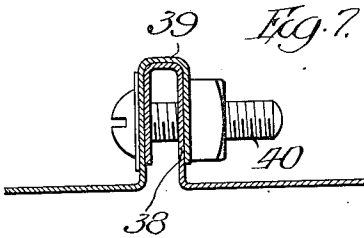
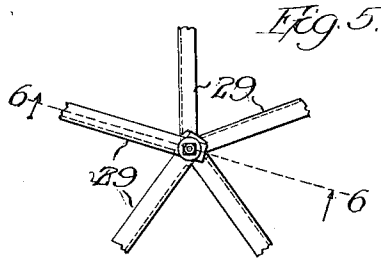
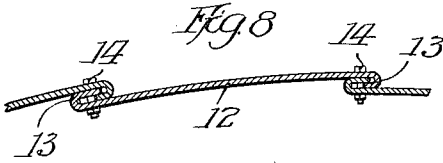
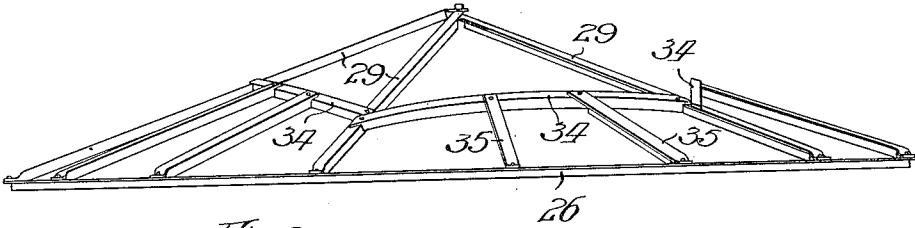


Fig. 11

Witnesses
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METALLIC BUILDING CONSTRUCTION.
APPLICATION FILED APR. 28, 1911.

1,060,745.

Patented May 6, 1913.

3 SHEETS—SHEET 3.

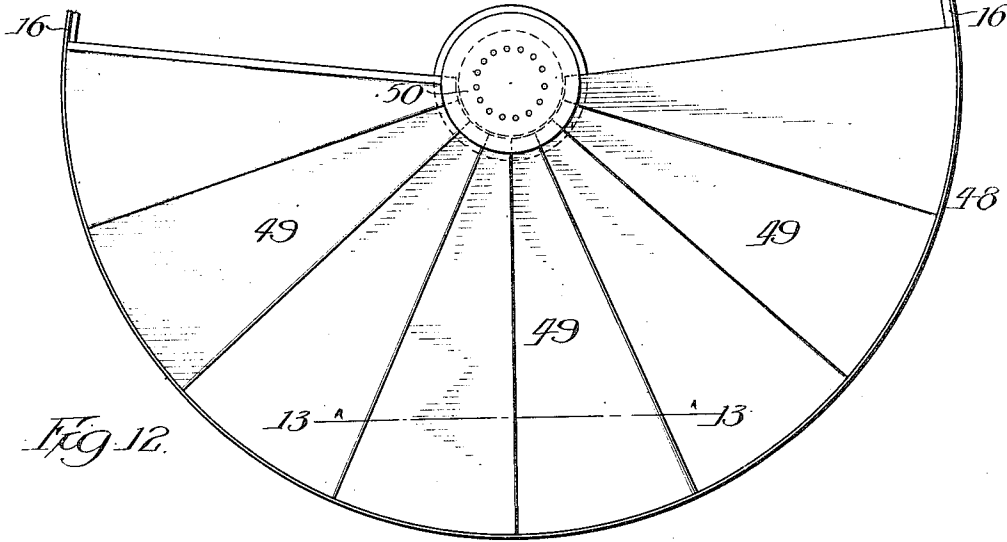


Fig. 12.

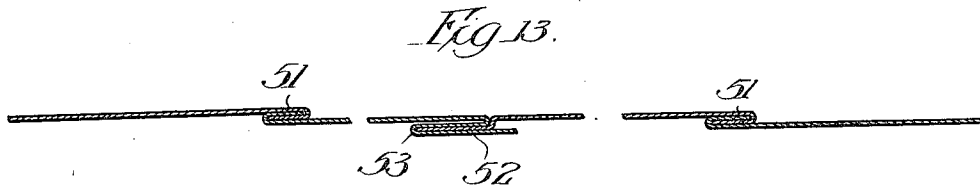


Fig. 13.

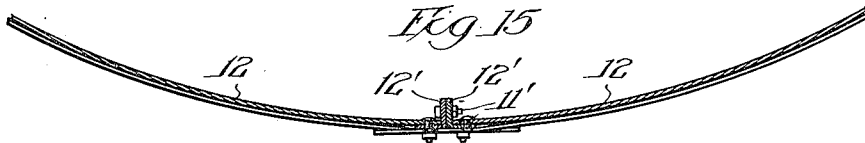


Fig. 15.

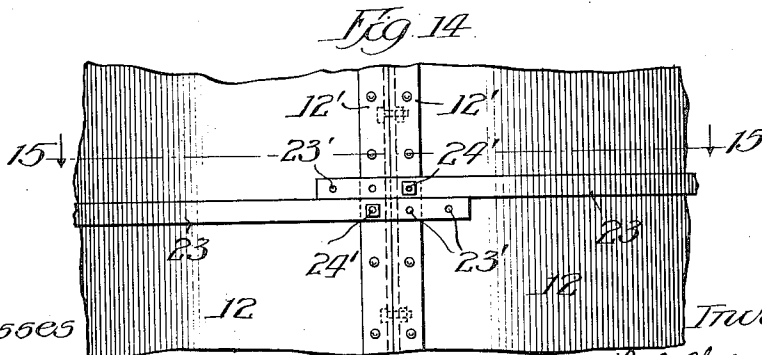


Fig. 14.

Witnesses
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UNITED STATES PATENT OFFICE.

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METALLIC BUILDING CONSTRUCTION.

1,060,745.

Specification of Letters Patent.

Patented May 6, 1913.

Application filed April 26, 1911. Serial No. 623,456.

To all whom it may concern:

Be it known that I, ASHEL W. CROTSLY, a citizen of the United States, residing at Arlington Heights, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Metallic Building Constructions, of which the following is a specification.

This invention relates to metallic building constructions such as grain-bins, garages and similar structures and aims to produce a building of this character which can be shipped in knockdown condition and can be readily and easily put together and taken apart by unskilled labor.

I am aware that sectional metallic building constructions have been made prior to my invention but these constructions have been assembled by bolting the sections together, this construction necessitating, of course, that the bolt holes in each section be accurately and precisely located so that they will correspond and aline with the companion holes on the section to be joined thereto.

My present invention aims to eliminate as far as possible the bolting of the various sections together and in order to accomplish this result I employ clips or other similar devices for securing the adjacent parts together, thus obviating the difficulties in assembling the construction which are presented when the bolt holes in the various parts are not accurately and precisely located.

The principal aim, therefore, of this invention is to produce a sheet-metal construction which shall be strong, rigid and durable, which shall be wind and vermin proof and which shall comprise comparatively few parts of simple construction capable of being manufactured at small expense and adapted to be readily and quickly assembled with a minimum amount of labor.

The invention will be best understood by reference to the following description when taken in connection with the accompanying drawings illustrating one preferred embodiment thereof.

On the drawings—Figure 1 is a front elevation of an embodiment of the invention. Fig. 2 is a fragmentary section on a large scale through the roof and side-walls. Fig. 3 is a fragmentary section on an enlarged scale through the side-walls and floor. Fig.

4 is an elevation showing the arrangement of the rafters in the roof. Fig. 5 is a fragmentary plan view showing the manner of joining the inner ends of the main rafters. Fig. 6 is a sectional elevation on the line 6—6 of Fig. 5, showing the roof plates and cap in position. Fig. 7 is a fragmentary sectional view showing one method of joining the adjacent roof plates. Fig. 8 is a sectional view showing the manner of joining the sheet-metal sections forming the side-walls. Fig. 9 is an enlarged fragmentary sectional view showing the manner of attaching the upper angle iron to the side-wall. Fig. 10 is a sectional elevation showing a central bracket for supporting the center hoop. Fig. 11 is a sectional view disclosing the manner of interlocking the roof plates. Fig. 12 is a plan view of the floor construction. Fig. 13 is a sectional view on the line 13—13 of Fig. 12. Fig. 14 is a fragmentary elevation of a central portion of the side-wall; and Fig. 15 is a sectional view on the line 15—15 of Fig. 14.

The side-walls of the construction comprise a plurality of sheet-metal sections 12 vertically disposed and preferably extending from top to bottom of the side-walls. The vertical edges of these sections are folded back upon themselves as indicated at 13 in Fig. 8 so that the edges of adjacent sections may be brought into interlocking engagement. Bolts 14 are preferably inserted through the interlocked edges to fasten the sections together and prevent the structure from collapsing. It will be noted from Fig. 8 that the edges of the sections are turned back farther at one side than at the other so that the bolts 14 pass only through three thicknesses of the metal and this construction has been found sufficiently strong for all purposes although it will be obvious that both edges might be turned back the same distance and perforated so that the fastening bolts 14 would extend through four thicknesses of metal, if preferred. Each of the side sections is interlocked with its adjacent sections in this manner except at one point on the circumference of the building where the last two sections to be assembled are joined in the manner shown in Figs. 14 and 15. One edge of each of these sections has an angle iron 12' riveted thereto, the adjacent flanges of said angle iron projecting inwardly as shown in Fig. 110

15. These flanges are provided with holes through which the bolts 11' are passed and when the nuts on these bolts are drawn up the angle irons and the sections 12 are drawn together to form a close joint at this point.

5 The lower ends of the sections are bent inwardly as indicated at 15 in Fig. 3, and in the angle formed by these inturned ends with the vertical portions of the sections there is arranged an angle iron 16. In order that it may not be necessary to perforate the vertical flange of this angle iron and also the side sections and to aline the perforations in assembling the structure so that the sections may be bolted to the angle iron, I have provided clips 17 bent to the form shown and secured by rivets 18 to the side sections above the angle iron. The lower ends of the clips which are spaced from the side-walls of the construction are adapted to slip over and embrace the vertical flange of the angle iron thereby preventing spreading of the sections away from the iron. To assist these clips in maintaining the sections in position and to prevent spreading of the construction at the bottom, a hoop 19 is placed around the construction to encircle and embrace the lower ends of the section and clips 20, secured by rivets 21 or other preferred fastening means to the inturned ends 15 of the sections, have their outer ends 22 upturned and spaced from the side sections to receive and support said hoop in position. A similar hoop 23 encircles the construction intermediate the ends of the side sections and this hoop is supported by clips or brackets 24 (Figs. 1 and 10) secured by bolts or rivets 25 to the side sections as shown. The ends of the hoop 23 are provided with perforations 23', as shown in Figs. 14 and 15, and bolts 24' are passed through these perforations to bolt the ends of the hoop to the vertical angle irons 12'. When the angle irons 45 are drawn together by the bolts 11' the ends of the hoop are drawn past each other and the hoop is tightened around the structure.

An angle iron 26 surrounds and embraces the side sections near their upper ends, as shown in Fig. 9, and this angle iron is supported in position by clasps 27 which surround the iron and are secured to the side sections by bolts or rivets 28. It will be obvious that these clasps may be attached to the side sections very readily and that no bolt holes through the angle iron and through the side sections need be alined in order to assemble the construction. The side-walls of the construction are thus surrounded, embraced and strengthened at their bottom, center and top by the hoops 19, 23 and the angle iron 26, respectively, and all of these encircling bands may be placed in position without regard to their angular relation to the walls and without alining any

bolt holes in the encircling bands with companion holes in the side sections. The advantages both in the manufacture and in the erection of this construction over the constructions in which the encircling bands are bolted in position, will be readily appreciated.

The framework of the roof comprises a plurality of main rafters 29 preferably formed of angle irons. The vertical flange 30 of each rafter is removed adjacent the outer end thereof, as shown in Fig. 2, and the horizontal flange 31 is bent downwardly to rest upon the upper face of the horizontal flange of the angle iron 26. The vertical flange thus terminates inside the vertical walls of the construction while the outer end of the horizontal flange is secured by bolts 32 or other fastening means to the angle iron 26. The vertical flanges 30 are also cut away adjacent the inner ends of the rafters and the horizontal flanges 31 are bent to assume a horizontal position, as shown in Fig. 6, and these bent portions are provided with perforations which are alined to receive a fastening bolt 33 which securely fastens the inner ends of the rafters together at the apex of the roof. Transverse members 34 (Fig. 4) are fastened at each end to the main rafters intermediate their ends and auxiliary rafters 35 are fastened at their upper ends to these transverse members and are bolted at their lower or outer ends to the angle member 26 in the same manner that the main rafters 29 are fastened to this angle member. This construction affords a strong, rigid roof structure adapted to support the roof proper. The roof itself consists of a plurality of metal roof plates 36 made narrower at their inner ends than at their outer ends so that they will completely cover a circular building such as is shown. The side edges of most of the plates are folded back upon themselves, as indicated at 37 in Fig. 11, so that the adjacent plates may be interlocked in a manner similar to the interlocking of the side-wall sections previously described, but in order that the roof plates may be more rigidly secured together and prevented from becoming displaced every fourth or fifth plate has one edge folded vertically as indicated at 38 in Fig. 7 and the adjacent edge of the next plate is folded in the form indicated by 39 to fit over the fold 38, so that the sections may be securely fastened together by bolts or rivets 40. While I have shown every fourth plate as provided with a vertical flange adapted to form a joint such as shown in Fig. 7 it will be obvious that all of the plates may be fastened together in this manner, if preferred, and, furthermore, in some constructions it may not be necessary to employ this type of joint but all of the plates may be interlocked in the manner disclosed in Fig. 11. The in-

ner end of each of the roof plates is up-
turned at 41, as shown in Fig. 6, to a height
equal to the height of the vertical seams 39
and a conical cap 42 is placed over the apex
of the roof so that it rests upon the up-
turned ends 41 and the top of the seams 39.
The bolt 33 which fastens the apex of the
roof together passes through the cap 42 and
through the perforations in the inner ends
31 of the rafters and when the nut is threaded
tightly onto the bolt, the cap, roof plates
and the rafters are all firmly clamped to-
gether thus producing a strong and rigid
construction at the apex of the roof.

It will be noted that the clasps 27 which
support the angle iron 26 in position space
this angle iron from the side sections of
the wall a distance equal to the thickness of
the sheet from which the clasps are made.
These spaces formed between the adjacent
clasps 27 are adapted to receive fastening
devices 43 (Fig. 2) which are secured by
rivets 44 to the roof plates 36. These fas-
tening devices consist of strips of metal
which are inserted between the angle iron
26 and the side sections, the lower ends of
each device being then bent upwardly as in-
dicated at 44 to embrace the vertical flange
of the angle iron 26. The roof plates are
thus rigidly secured to the angle iron 26
and the side-walls, the roof-frame and the
roof plates are rigidly and securely bound
together. When the building construction
is to be used as a grain-bin, an opening
through which the grain may be introduced
directly from the threshing-machine into
the bin is provided in the roof and this
opening may be normally closed by a suit-
able cover 45. A manhole 46 is also pro-
vided and a plurality of openings 47 through
which the grain may be removed are formed
in the side sections, these openings being
normally closed by any preferred type of
cover or closure.

The floor which is designated generally as
48 consists of a plurality of metal floor
plates 49 made narrower at their inner ends
than at their outer, as shown in Fig. 12;
the outer ends of the plates being riveted to
the angle iron 16, as shown in Fig. 3, and
the inner end being riveted to a central
plate 50. The floor plates are arranged in
sections the plates in each section having
their side edges turned back upon them-
selves to interlockingly engage, as indicated
at 51 in Fig. 13. One of the outer plates
of each section has its edge bent down-
wardly and then outwardly as indicated at
52, while the opposite plate of the section
has its outer edge bent rearwardly, then
downwardly and outwardly as indicated at
53 to form a groove or pocket into which
the projecting lip 52 of the adjacent section
fits. This joint between the sections pre-
sents a smooth upper surface and produces

a close joint between the sections, thereby
forming a strong and rigid floor construc-
tion.

It is believed that the construction and
many advantages of my present invention
will be understood from the foregoing with-
out further description and it will be ob-
vious that various changes in the size,
shape, arrangement and proportion of the
various parts may be resorted to without
departing from the spirit or sacrificing any
of the material advantages of the inven-
tion.

I claim:

1. In a metallic building construction, the
combination of vertically disposed sheet-
metal sections having the upright edges of
the said sections bent back parallel with the
main portion of the said sections and spaced
apart therefrom, the bent-back portion of
one edge being wider than the bent-back
portion of the other, the bent back portion
being on opposite sides of the sections, the
narrow bent-back portion of one section be-
ing interlocked with the wider bent-back
portion of the section next adjacent, and
a plurality of bolts passing through the
wider bent-back edge and its main portion
and the main portion only of the narrow
bent-back edge at the junction of the sec-
tions to secure the said sections in inter-
locked relation.

2. In a metallic building construction, the
combination of a plurality of interlocked
vertically disposed metallic sections, an ad-
justable hoop surrounding said sections, a
pair of vertically disposed angle irons se-
cured to adjacent edges of the said sections
with corresponding flanges extending at the
inner side of the structure, means adjust-
ably securing the ends of said hoop to the
other flanges of said angle irons, and
bolts extending through the first-mentioned
flanges for drawing the said angle irons to-
gether to secure the said sections in posi-
tion.

3. In a metallic building construction, the
combination of a plurality of interlocked
vertically disposed sections, an adjustable
hoop surrounding said sections, a pair of
vertically disposed angle irons each having
a flange interposed between the edges of two
adjacent sections and extending inwardly
of the structure, means securing an edge of
one of the said sections and an end of the
said hoop to the other flange of each angle
iron, and bolts drawing together the in-
wardly directed flanges of the said angle
irons to secure the said sections in position.

4. In a metallic building construction, the
combination of side-walls consisting of ver-
tically disposed interlocked metallic sec-
tions, an angle iron secured to the inner
face of said walls at the bottom thereof, the
lower end of said walls being turned in-

wardly beneath said angle iron, a hoop surrounding said walls adjacent the bottom, and a plurality of clips fixed to the lower intumed ends of said side walls and embracing said hoop to retain the same in position.

5 5. In a metallic building construction, the combination of a plurality of interlocked vertically disposed side sections, the lower
10 end of each section being turned inwardly, an angle iron arranged around the interior of said construction and resting on said intumed ends, a plurality of clips fixed to said sections and embracing the vertical flange

of said angle iron, a plurality of clips fixed 15 to the under portion of the intumed ends of said sections and having their outer ends upturned to form pockets between said ends and the outer faces of the side sections, and a hoop surrounding and embracing 20 ing said sections, disposed in said pockets adjacent the bottoms of the sections and outside said angle iron.

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Witnesses:

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