

N. K. CAPLAN.
BUILDING STRUCTURE.
APPLICATION FILED APR. 25, 1920.

1,384,235.

Patented July 12, 1921.
2 SHEETS—SHEET 1.

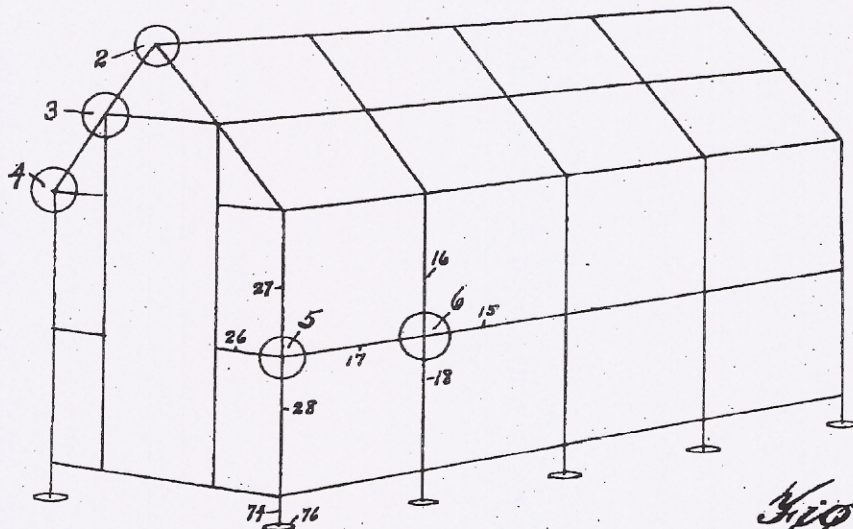


Fig. 1

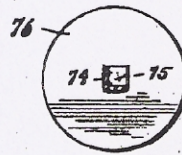


Fig. 8

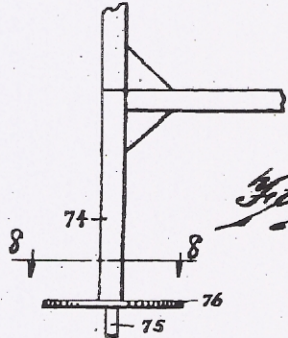


Fig. 7

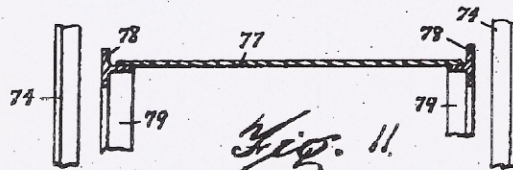


Fig. 11

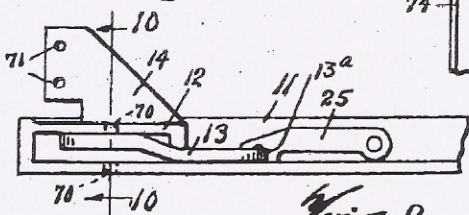


Fig. 9

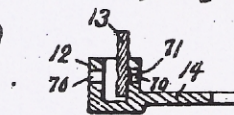


Fig. 10

WITNESS:

A. J. Kerner

INVENTOR

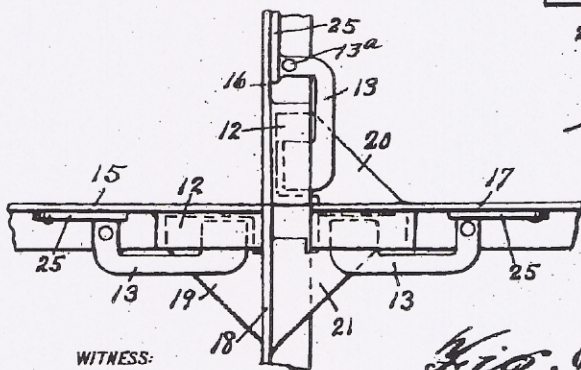
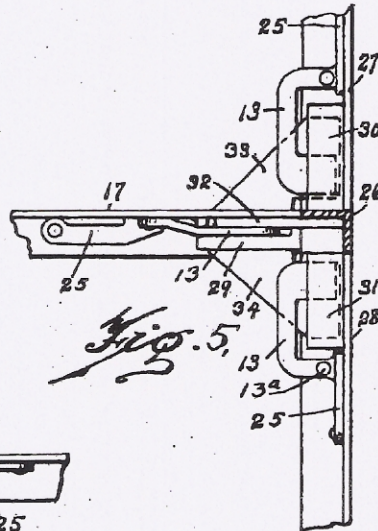
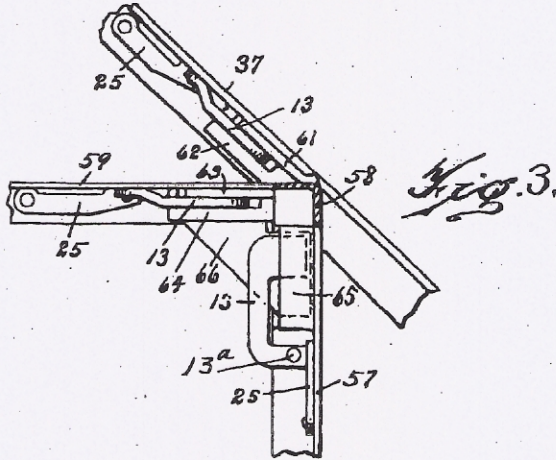
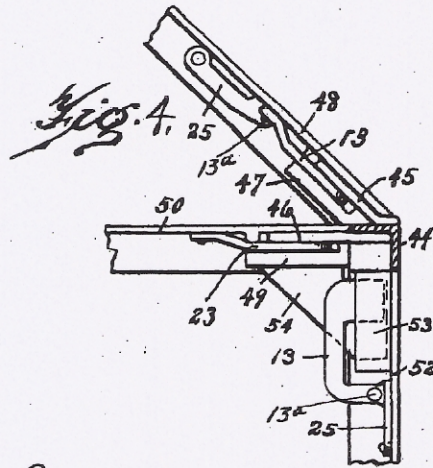
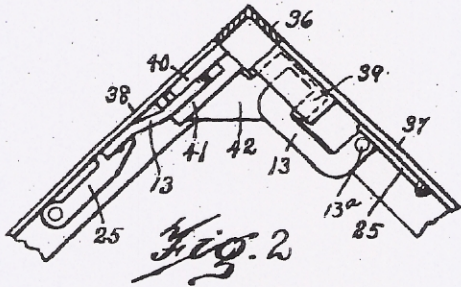
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BUILDING STRUCTURE.
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1,384,235.

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2 SHEETS—SHEET 2.



WITNESS:

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Fig. 6.

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UNITED STATES PATENT OFFICE.

NATHAN K. CAPLAN, OF DETROIT, MICHIGAN.

BUILDING STRUCTURE.

1,384,235.

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Application filed April 26, 1920. Serial No. 376,589.

To all whom it may concern:

Be it known that I, NATHAN K. CAPLAN, a citizen of the Dominion of Canada, and residing at Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Building Structure, of which the following is a specification.

This invention relates to the construction of a skeleton or frame of a demountable or knock-down building upon which sheets of fabric, board or metal may be secured in any desired manner, and its object is to provide a series of units which can be united without the aid of tools to constitute this frame.

This invention consists of a series of building units, preferably of angle bars, which, when united, form the horizontal, upright and inclined members of the frame of a building, said units being formed with sockets, with tongues adapted to enter the sockets of adjacent units, and with dogs to lock the tongues in said sockets.

It further consists in providing latches to lock the dogs in position.

It also consists in the details of construction illustrated in the accompanying drawings and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a diagram illustrating the location of the several different types of joints illustrated in the following figures. Figs. 2, 3, 4, 5 and 6 are details of connections which are respectively at the points inclosed by circles having the same numbers in Fig. 1. Fig. 7 is an elevation of the lower end of a corner post. Fig. 8 is a section on the line 8-8 of Fig. 7. Fig. 9 is an elevation of one end of one of the units. Fig. 10 is a section on the line 10-10 of Fig. 9. Fig. 11 is a view illustrating a floor structure.

Similar reference characters refer to like parts throughout the several views.

The structure indicated in Fig. 1 is built up of units, preferably formed of angle bars with means to connect the ends of adjacent units. Fig. 9 shows one end of an angle bar 11 which is formed with a socket 12 and is provided with a dog 13 mounted on a pin 13^a adjacent the socket, the flat head of the dog being adapted to enter the socket adjacent a tongue on an adjacent unit and lock it in position by wedging. These tongues 14 are usually at the ends of the units but they

may extend at various angles and from different sides, depending upon the location of the sockets of the adjacent units.

The connection shown in Fig. 6 is a straight cross consisting of the bars 15, 16, 17 and 18 of any desired cross-section, preferably angle bars. The bars 15 and 16 are formed with sockets 12 to receive the tongues 19 and 20 on the bars 18 and 17 respectively, which are keyed in position by means of the pivoted dogs 13. The bar 18 has two tongues 19 and 21 to enter the sockets of the bars 15 and 17. The pivot ends of these dogs may be squared and a pawl 25 may be pivoted adjacent the pivot of each dog to fit between it and the adjacent flange of the angle bar and so lock the dog in its wedging position, as shown in Figs. 6 and 9. The three tongues 19, 20 and 21 are in the same plane and so the front sides of the four angle bars will be in the same plane.

In Fig. 5, a joint between two horizontal units 17 and 26 at right angles to each other and the aligned units 27 and 28 is shown. The units 17, 27 and 28 are provided with sockets 29, 30 and 31 to receive the tongues 32, 33 and 34, of which the unit 17 again has two, the tongues 33 and 34, while the tongue 32 is on the unit 26. The dogs 13 and latches 25 are as before described.

In Fig. 2, three units 36, 37 and 38 meet at right angles, the unit 36 constituting part of the ridge of the frame. The units 37 and 38 are formed with sockets 39 and 41 respectively, the former receiving the tongue 42 on the unit 38 and the latter the tongue 40 on the rafter unit 36, the usual dogs 13 and latches 25 being again provided to hold the tongues in the sockets.

In Fig. 4, the longitudinal unit 44 is provided with two tongues 45 and 46, the former being inclined to enter the socket 47 in the inclined or rafter unit 48, while the tongue 46 is horizontal to enter the socket 49 of the transverse unit 50. The upright unit 52 has a socket 53 to receive the tongue 54 on the transverse unit 50. These tongues are again locked in position as before described. This indicates the flexibility of this system and that I am not limited as to the location of the tongues and sockets.

When a comparatively large and high doorway is desired, a connection between rafter, door casing, longitudinal and trans-

verse units 37, 57, 58 and 59 may be advisable, and the connection may be necessarily located intermediate the ends of the rafter unit 37. This is accomplished in the manner shown in Fig. 3 where the longitudinal unit 58 is provided with an inclined tongue 61 which extends into the socket 62 intermediate the ends of the rafter unit 37 and a horizontal tongue 63 which extends into the socket 64 of the transverse unit 59. The upright unit 57 has a socket 65 which receives the tongue 66 on the transverse unit 59.

In each of these examples of connections, the several units are all joined by the tongues being firmly locked in sockets by means of dogs. A very few types of units are necessary for a complete structure and these may be made standard and interchangeable. The several parts may be more securely united by forming depressions 70 in the walls of the sockets and providing the dogs 13 and tongues 14 with small bosses 71, as shown in Figs. 9 and 10, which may enter these depressions to lock the parts in position.

In order to prevent the feet 74 from sinking into soft ground, I may provide them with centering pins 75, as shown in Figs. 7 and 8, to extend through the disks 76 which support the frame work. If desired, a floor 77 may be carried by separate side bars 78 which rest on independent posts 79.

While only one end of adjacent units are shown and described, it will be understood that the opposite ends of these units will be correspondingly formed with sockets, tongues and locking dogs whenever necessary to completely unite such opposite ends to those units which meet it.

The details, sizes and proportions of the several parts may all be changed by those skilled in the art without departing from the spirit of my invention as set forth in the following claims.

I claim:—

1. In a metal frame, the combination of a series of units meeting at right angles, a plurality of the units being formed with sockets having openings extending longitudinally of the units and the remainder of the units having laterally extending tongues projecting into adjacent sockets.

2. In a metal frame, the combination of a series of units meeting at right angles, a plurality of the units being formed with sockets having openings extending longitudinally of the units and the remainder of the units having laterally extending tongues projecting into adjacent sockets, and locking dogs pivoted adjacent the sockets to secure the tongues in the sockets.

3. In a metal frame, the combination of a series of units meeting at right angles, a plurality of the units being formed with sockets having openings extending longitudinally of the units and the remainder of

the units having laterally extending tongues projecting into adjacent sockets, and means to secure the tongues in the sockets.

4. In a metal frame, the combination of a series of units meeting at right angles, a plurality of the units being formed with sockets having openings extending longitudinally of the units and the remainder of the units having laterally extending tongues projecting into adjacent sockets, the tongues and the walls of the sockets being formed to interengage, and means to lock the tongues in the sockets.

5. In a metal frame, the combination of a series of units meeting at right angles, a plurality of the units being formed with sockets having openings extending longitudinally of the units and the remainder of the units having laterally extending tongues projecting into adjacent sockets, locking dogs pivoted adjacent the sockets to secure the tongues in the sockets, and means to hold the dogs in operative position.

6. In a building frame, the combination of two frame units extending at right angles from each other, one of the units having a longitudinal narrow socket adjacent one end and the other unit having a flat tongue extending into said socket, and means to secure the tongue in the socket.

7. In a building frame, the combination of two frame units extending at right angles from each other, one of the units having a longitudinal narrow socket adjacent one end and the other unit having a flat tongue extending into said socket, and means to secure the tongue in the socket, said means comprising a dog pivoted to the first named unit adjacent the socket and having a flat head extending into the socket with the tongue.

8. In a building frame, the combination of two frame units extending at right angles from each other, one of the units having a longitudinal narrow socket adjacent one end and the other unit having a flat tongue extending into said socket, the wall of the socket having recesses and the tongue having projections adapted to enter said recesses to prevent the tongue moving out of said socket.

9. In a building frame, the combination of frame units, one of the units having a longitudinal socket and the other unit having a flat tongue extending into said socket, one wall of the socket and one side of the tongue being formed with interengaging portions to hold the tongue in position in the socket.

10. In a building frame, the combination of two frame units, one of the units having a longitudinal socket and the other unit having a flat tongue extending into said socket, a locking dog pivoted adjacent the socket and adapted to enter the socket with the

tongue to secure the tongue in the socket, and a latch to prevent the dog from moving out of the socket.

11. In a building frame, the combination
5 of two frame units, one of the units having a longitudinal socket and the other unit having a flat tongue extending into said socket,

a locking dog pivoted adjacent the socket and adapted to enter the socket with the tongue to secure the tongue in the socket, 10 and means to prevent the dog from moving out of the socket.

NATHEN K. CAPLAN.