

Oct. 7, 1930.

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1,777,376

AIRPLANE HANGAR

Filed Sept. 21, 1928

3 Sheets-Sheet 1

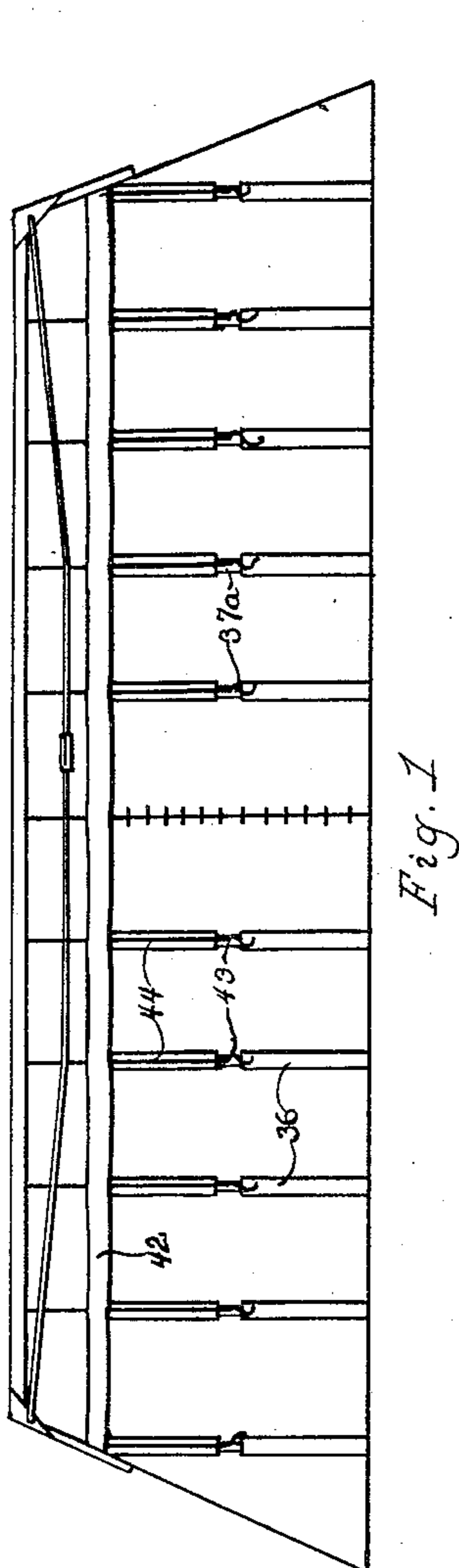


Fig. 1

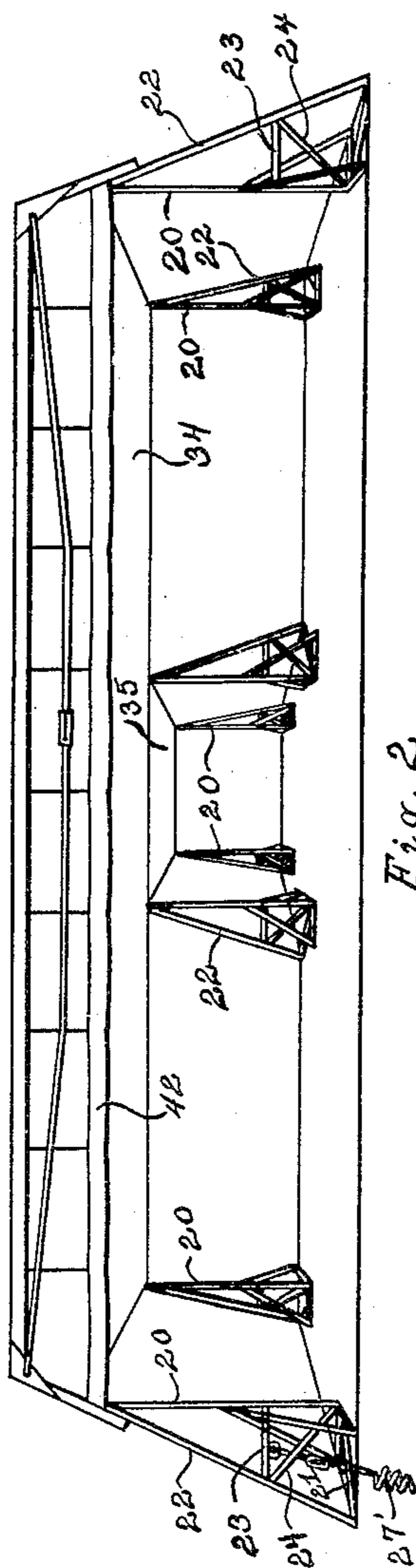


Fig. 2

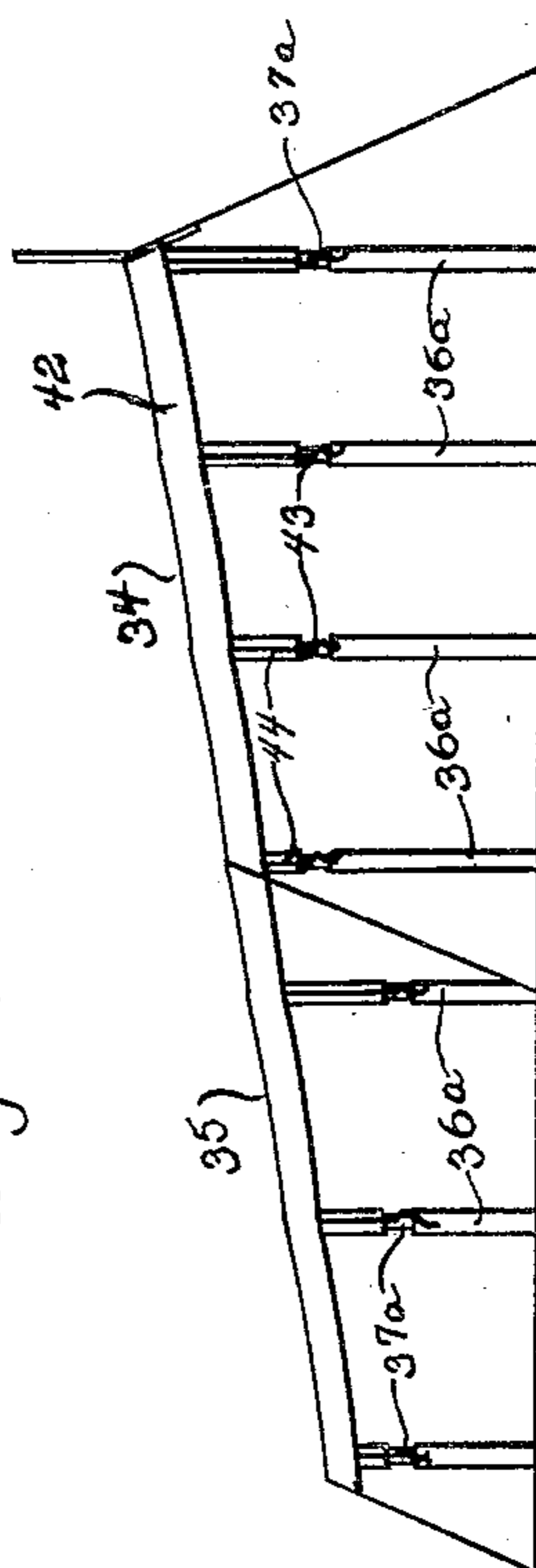


Fig. 3

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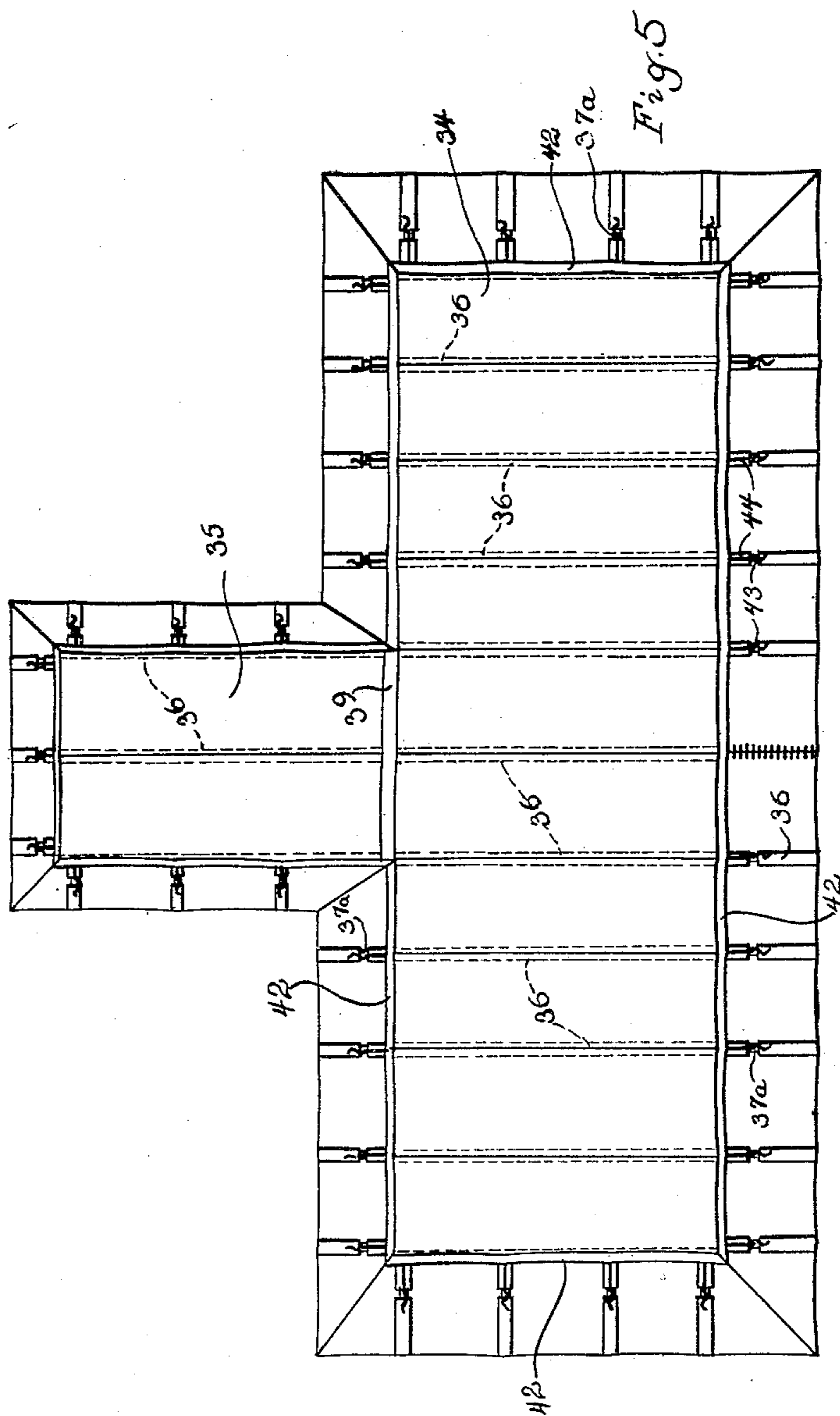
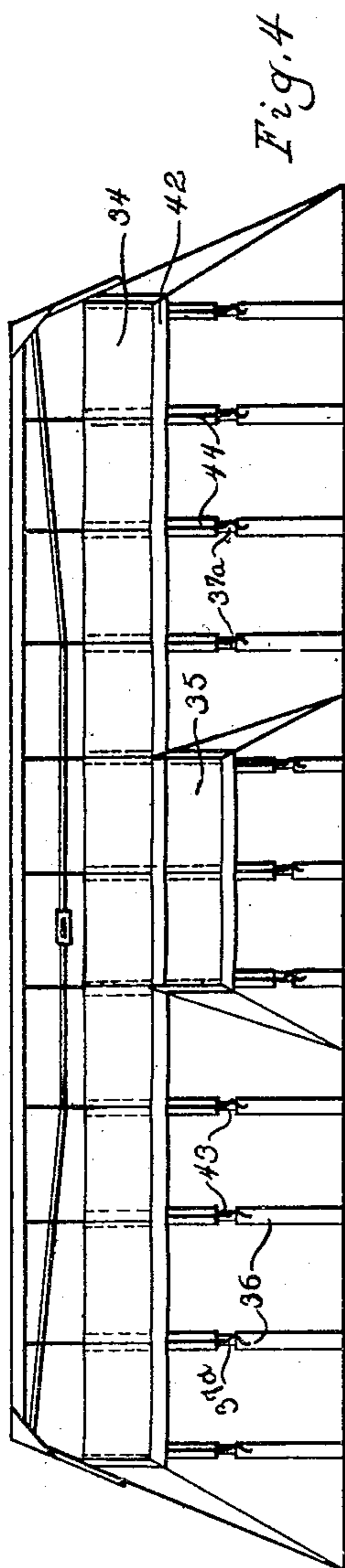
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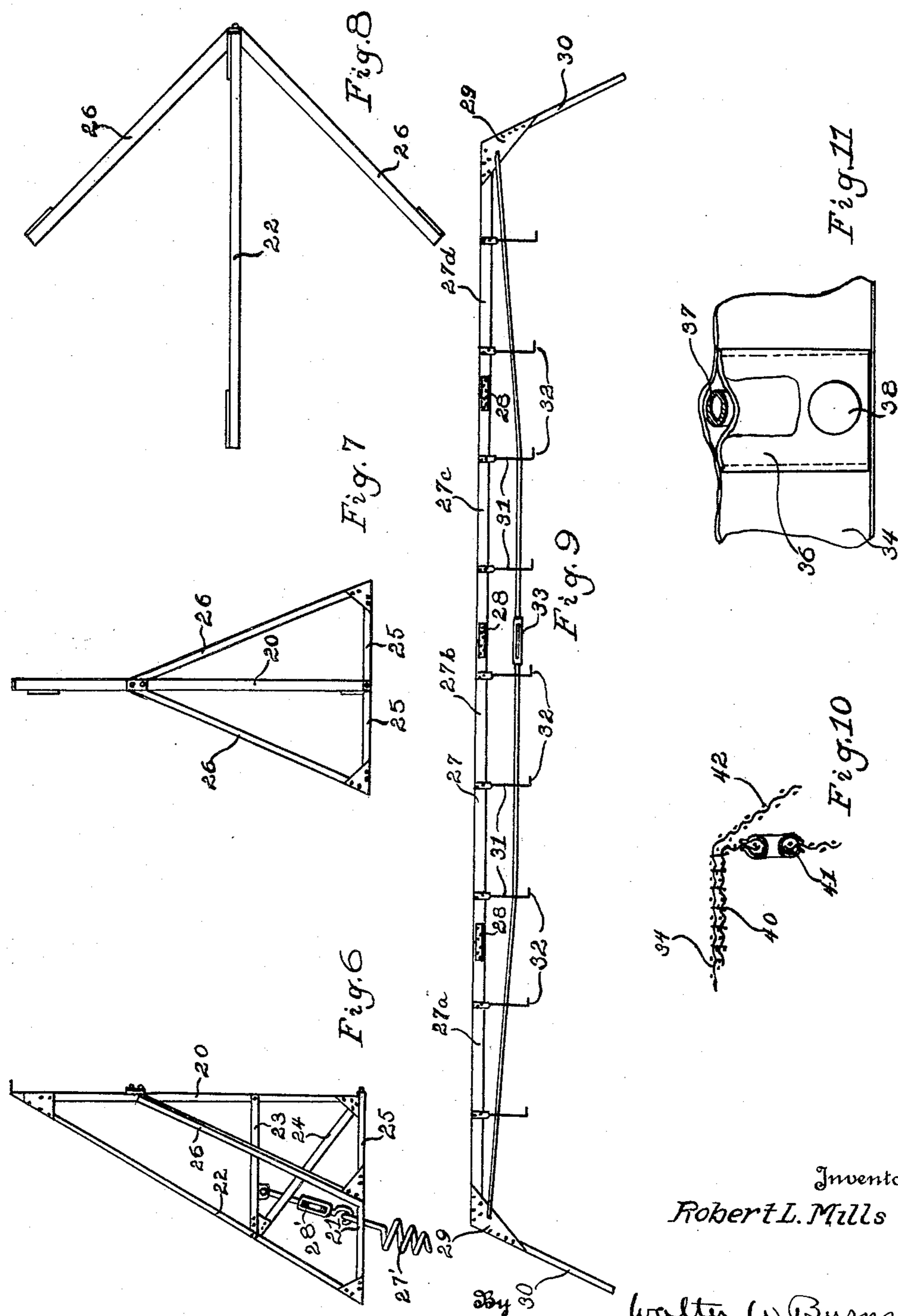
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AIRPLANE HANGAR

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3 Sheets-Sheet 3



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AIRPLANE HANGAR

Application filed September 21, 1928. Serial No. 307,455.

This invention relates to hangars for airplanes and particularly to those hangars which are particularly adapted to be easily erected, taken down and transported.

5 Due to the portability of airplanes and to the fact that they may be needed temporarily in large numbers at one place, there has developed the need of a hangar of great portability and lightness.

10 The primary object of this invention is the provision of an airplane hangar which will be portable, yet light and easily taken down and put up.

Other objects of this invention are to provide an airplane hangar which will have:—

15 (1) Substantial corner supports for (2) light flexible sides and (3) a light flexible roof (4) reinforcements in the sides and roofs and (5) pockets to receive the reinforcements (6) separate, but connecting compartments for the wings and fuselage of the airplane to be housed.

20 Other and further objects of this invention will be apparent to those skilled in the art from a reading of the complete specification and claims.

Referring to the drawing wherein is illustrated a preferred embodiment of this invention,

30 Figure 1 is a front view of the invention with the front walls in place.

Figure 2 is a view similar to Figure 1, but showing the front walls removed.

Figure 3 is a side elevation.

35 Figure 4 is a rear elevation.

Figure 5 is a top plan view.

Figures 6 to 8 are detail views of a main support.

Figure 9 is a side view of the main truss.

40 Figure 10 is a detail view of a cross section of the edge of the roof.

Figure 11 is a detail fragmental view of a section of the pocket at the underside of a section of the roof showing the position of a bamboo reinforcement.

The same reference characters refer to the same or similar parts throughout the several views of the drawing.

50 The main supports of the structure are placed at intervals as at corners and are so

constructed as to be separated to lie flat in transport or shipping.

These main supports are illustrated in place in Figure 2 and are shown in detail on a larger scale in Figures 6, 7, and 8. In the 55 embodiment illustrated a triangular frame comprising the upright member 20, the base member 21 and the diagonal 22 are provided with stiffening braces 23 and 24. Suitable plates are used to secure these frame members 60 together.

At each side and at about 45° therefrom are two side frames composed of the base members 25 and the diagonals 26. The frame members 25 and 26 are secured together by 65 rivets and a suitable corner plate. At the outer ends these members 25, 26 are detachably bolted to the upright frame member 20. When detached, the several parts may be laid flat for transport. The parts 20, 21, 22, 70 23, 24, 25 and 26 are of angle iron in the illustrated embodiment.

In order to securely hold or anchor the supports to the ground and to add stability to the structure as a whole, a spiral anchor 75 screw as illustrated at 27' in Figure 6 may, if desired, be screwed into the ground below the support and connected to the frame member 23 by a plate, the screw anchor 27 and the frame member 23 being drawn together 80 by a suitable turn-buckle 28'. If desired, more than one of these anchor means may be used.

An important feature of the invention is the provision of a compartment for the wing 85 portion of the airplane and a separate, but connecting compartment for the fuselage of the plane. By this construction, it is easier to support the roof than would otherwise be the case. But in order to support the forward end of the roof, to permit entry and 90 exit of the plane, I have provided a truss structure extending between the two front corner main supports. The details of the truss are not a part of the invention and will 95 vary according to the size of the plane to be accommodated and the conditions under which the hangar is to be used.

In the illustrated embodiment, the main beam is a channel iron 27 composed of sepa- 100

5 rable sections 27^a, 27^b, 27^c, 27^d. Plates 28 are used to secure the sections of the beam 27 together. These plates are preferably riveted to one section and bolted to the adjacent section. This permits separation when being transported. At the outer end of the sections 27^a, 27^d are corner plates 29 to which are attached angles 30, these latter being detachably bolted to the diagonal bars 22 of the main supports.

10 Spaced along the truss member 27 and depending therefrom, are supporting straps 31. These straps are turned at their lower ends to form the angular portion 32. These angular portions 32 are perforated for the passage of ropes which might be termed clews. These clews will be later described.

15 Detachably secured to the plates 29 and extending through openings in each depending strap 31, is a cable having a turnbuckle 33 to provide adjustment.

20 In the described embodiment, I have provided eight main supports, two at the front of the hangar supporting the truss, two at the rear corners of the wing compartment, two at the rear corners of the fuselage compartment and two at the junctions of the walls of the compartments of the hangar. These main supports at the front of the hangar are preferably made higher than those at the line of the rear of the wing compartment and the latter are preferably made higher than the two at the rear of the fuselage compartment.

30 By this construction, it will be observed that two important results are obtained:— first the roof has a slope from front to rear to provide proper drainage for rain water and secondly, since the airplane at rest tapers in height to the rear, an economy of material is effected by this sloping of the roof of the hangar from front to rear.

35 The roof is of a light material, preferably of some flexible foldable material such as canvas. In the illustration are shown two sections, the forward section 34 covering the wing compartment and the rear section 35 covering the fuselage compartment. On the underside of the roof sections are reinforcements. In the form illustrated, there are provided strips of canvas stitched at its edges from the high to the lower part of the roof from front to rear. These strips are on the underside of the roof and provide pockets 36 for bamboo poles 37. Those found to be suitable are of about one inch diameter or slightly larger. The poles 37 are cut a few inches shorter than the pockets 36. As shown in Figure 11, snap buttons 38 are provided at the ends of the pockets to retain the poles in place. A flap 39 is provided to overlap the fuselage compartment roof section 35. At the inner edge of the roof, a strip 40 is stitched, in which are placed grommets 41 to secure the roof in place. The roof is ex-

tended to provide a storm flap 42 as clearly shown in Figure 10.

As in the case of the roof, strips 36^a are applied to the side walls and front wall of the hangar to form pockets for the reinforcing strips as bamboo 37^a. In the same way, snap buttons are applied to the ends of the strips 36^a to close the ends of the pockets.

70 The pockets of the side walls are not continuous throughout their lengths. An interruption occurs which is shown at 43. This exposes the bamboo pole reinforcement. Secured in the upper edge of the side and front walls are the clew lines 44, already referred to. These lines are fastened to grommets at the top edges of the sides and are spaced correspondingly to the grommets 41 in the strip at the edge of the roof. The clew lines in the front walls are so spaced as to be opposite to the openings in the lower ends 32 of the straps 31 which extend from the truss member 27. The joining edges of the side and front walls are provided with cooperating members of snap buttons which secure these edges together to close the corners and to close the opening between the two front wall members. In assembling the hangar, these clew lines are passed through the grommets 41, the ends being secured to the poles 37 at the exposed places 43.

90 In view of the fact that the side and front walls are inclined in a way that wind pressure from without forces the lower edges against the ground, no provision is illustrated for securing the lower edges to the ground. If any such provision is desired, any well known or suitable method may be used.

100 It will be observed that in the construction illustrated, the reinforcing members of the front and rear walls are opposite each other and are connected through the roof by roof reinforcement members.

This is true of all except the center roof reinforcing member. To assist in supporting the rear end of the forward center reinforcement member and the center reinforcing member of the fuselage compartment roof, a bamboo pole may be placed across the forward end of the fuselage compartment roof beneath the flap 39.

110 While there is shown and described in detail an embodiment of this invention, it is to be understood that the disclosure of details is merely illustrative and that modifications and changes may be made without departing from the spirit of the invention and within the scope of the appended claims.

120 Having described the invention in detail, what is claimed and desired to be secured by Letters Patent is:—

125 1. An airplane hangar having a sloping roof of flexible material, side and front walls of flexible material all of the side and front walls having a slope from the ground upwardly and inwardly toward the roof, sup-

porting means at the corners of the hangar, reinforcing means for the roof at two of the opposite edges and elevated stiff means for supporting the forward edge of the roof and attached at its ends to the forward corner supporting means.

2. An airplane hangar having a sloping roof of flexible material, side and front walls of flexible material, all of the side and front walls having a slope from the ground upwardly and inwardly toward the roof, supporting means at the corners of the hangar and elevated stiff means for supporting the forward edge of the roof and attached at its ends to the forward corner supporting means, the side walls having light, elongated, reinforcing means extending in the direction of slope.

3. An airplane hangar having a sloping roof, side and front walls, all of flexible material, a main compartment for the wing portion of the airplane to be housed and of a greater width than the wing-spread thereof and another connecting compartment of lesser width to receive the fuselage of the airplane, supporting means at the corners of the hangar and elevated stiff means for supporting the forward edge of the roof and attached at its ends to the forward corner-supporting means, the front and side walls being sloped from the roof outwardly to the ground.

4. An airplane hangar having a sloping roof, side and front walls all of flexible material, a main compartment for the wing portion of the airplane to be housed and of a greater width than the wing-spread thereof and another connecting compartment of lesser width to receive the fuselage of the airplane, supporting means at the corners of the hangar and elevated stiff means for supporting the forward edge of the roof and attached at its ends to the forward corner-supporting means, the front and side walls being sloped from the roof outwardly to the ground, and bamboo strips extending along the slope of the roof and sides and secured thereto, as reinforcements.

5. An airplane hangar having a sloping roof of flexible material, side and front walls of flexible material, all of the side and front walls having a slope from the ground upwardly and inwardly toward the roof supporting means at the corners of the hangar, reinforcing means for the roof at two of the opposite edges, elevated stiff means for supporting the forward edge of the roof and attached at its ends to the forward corner supporting means, the corner roof supporting means being of a shape to hold in place the sloping sides at the corners.

In testimony whereof I hereunto affix my signature.

ROBERT LEWIS MILLS.