

1,250,992.

F. W. DOST.
AEROPLANE HANGAR DOOR.
APPLICATION FILED AUG. 14, 1917.

Patented Dec. 25, 1917.

3 SHEETS—SHEET 1.

FIG. 1

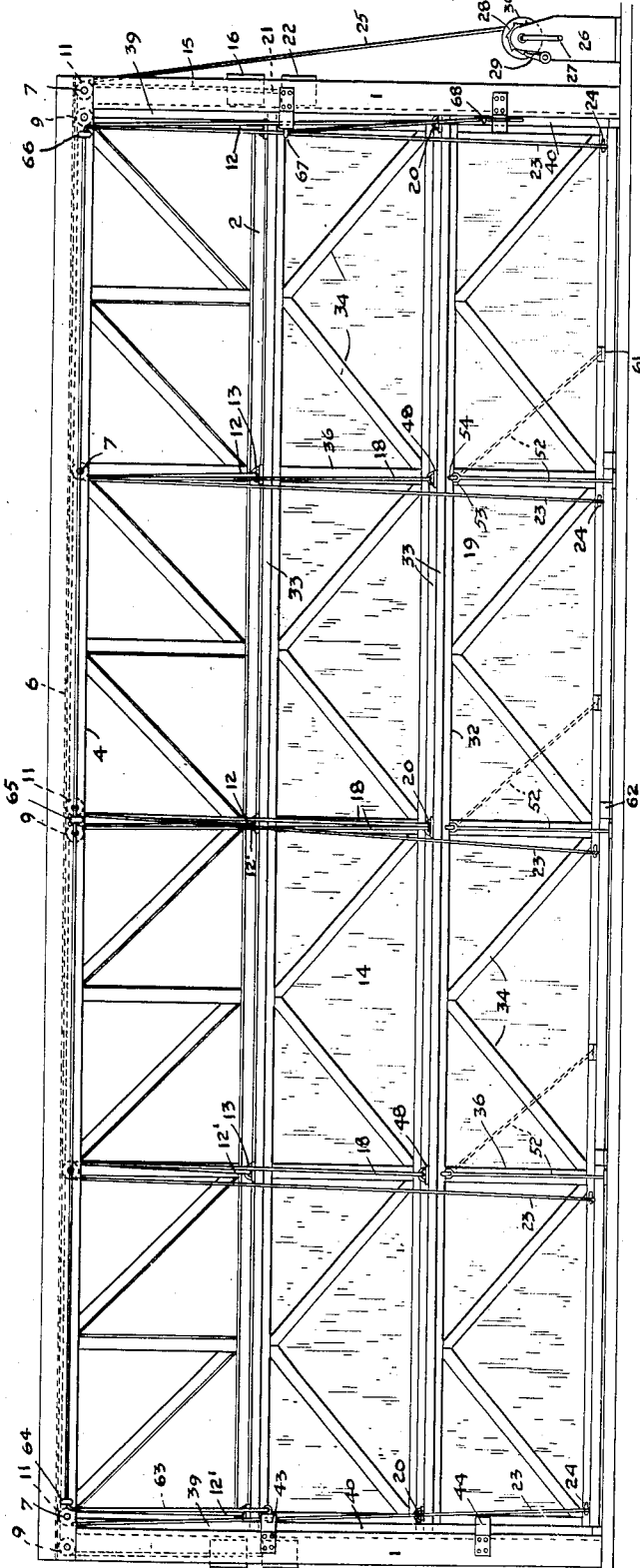
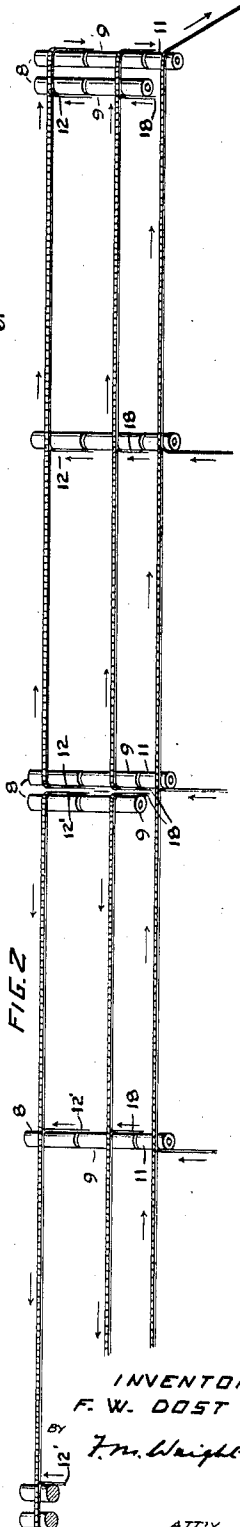


FIG. 2



INVENTOR
F. W. DOST

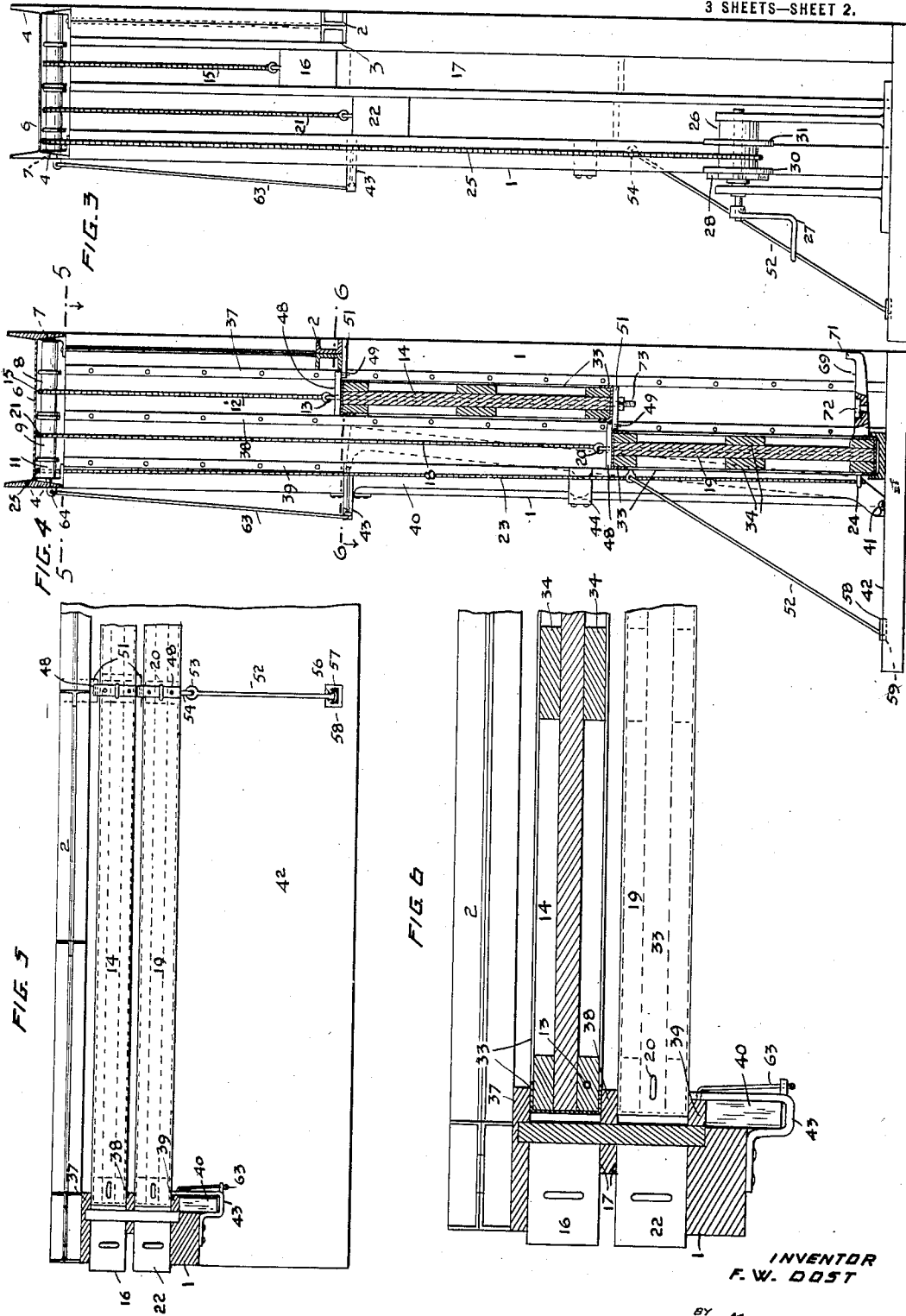
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3 SHEETS—SHEET 2.



INVENTOR
F. W. DOST

BY *J. H. Wright*

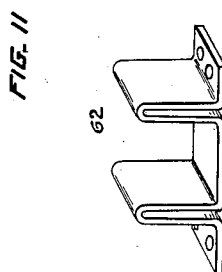
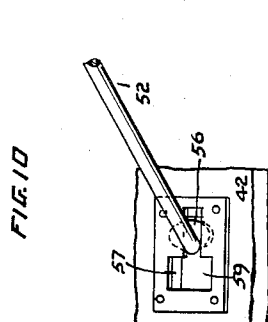
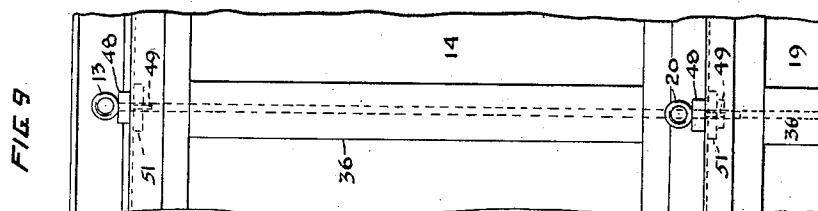
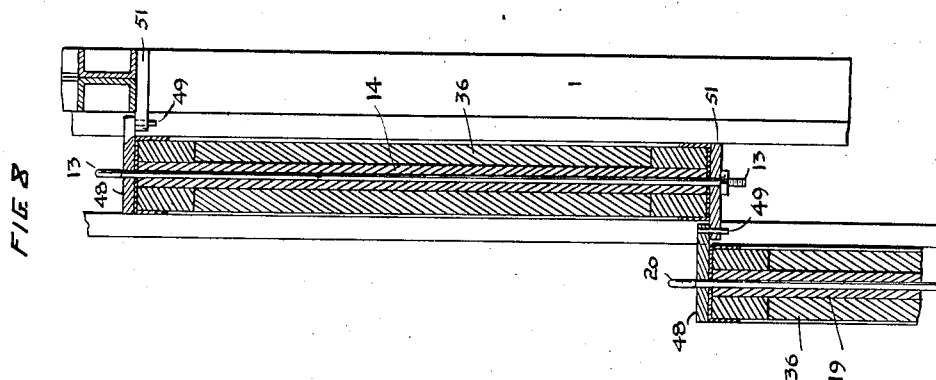
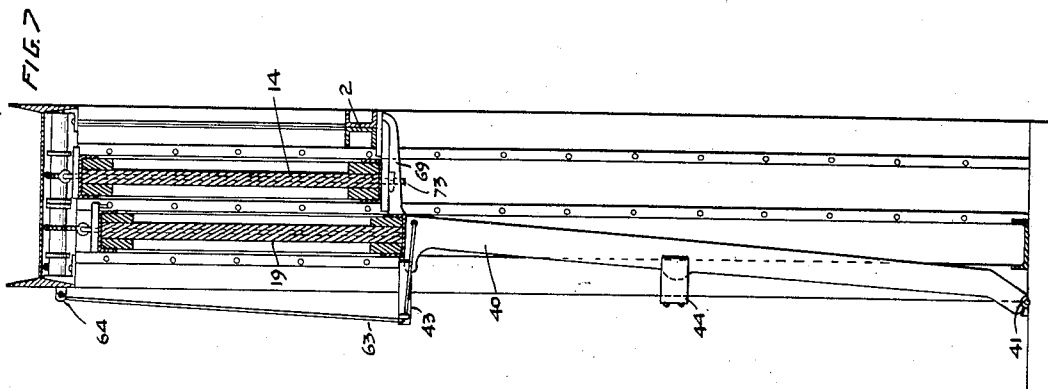
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3 SHEETS—SHEET 3.



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ATTY.

UNITED STATES PATENT OFFICE.

FREDERICK W. DOST, OF VALLEJO, CALIFORNIA.

AEROPLANE-HANGAR DOOR.

1,250,992.

Specification of Letters Patent. Patented Dec. 25, 1917.

Application filed August 14, 1917. Serial No. 186,123.

To all whom it may concern:

Be it known that I, FREDERICK W. DOST, a citizen of the United States, residing at Vallejo, in the county of Contra Costa and State of California, have invented new and useful Improvements in Aeroplane-Hangar Doors, of which the following is a specification.

The present invention relates to improvements in doors for aeroplane hangars.

These doors are from 60 to 90 feet wide, and may be from 40 to 50 feet high, and are therefore of great weight. One object of the present invention is to provide means whereby they may be so counterweighted that one man can easily open and close them.

Furthermore, these doors being of great area are subjected to great pressure by winds. A further object therefore is to provide means whereby they may be suitably connected together and braced to prevent them from being disturbed by heavy winds.

In the accompanying drawings, Figure 1 is an inside view of the door in its closed position; Fig. 2 is a diagrammatic view showing the rollers and chains for operating the door; Fig. 3 is an end view of the door in its closed position; Fig. 4 is a vertical cross-sectional view thereof in the same position; Fig. 5 is a broken horizontal sectional view on the line 5—5 of Fig. 4; Fig. 6 is a similar view on the line 6—6 of Fig. 4; Fig. 7 is a vertical cross-section of the door in its open position; Fig. 8 is an enlarged broken cross-sectional view of two portions of the door in its closed position; Fig. 9 is an enlarged broken inside view thereof; Fig. 10 is a broken perspective view of a slotted holding plate and a brace therein; Fig. 11 is a perspective view of a retainer for the door.

Referring to the drawings, 1 indicates door jambs, the upper portions of which are connected to the ends of a horizontal truss 2, said door jambs being recessed at the top, as shown at 3, in their outer edges to receive the ends of said truss. Upon the truss and the upper ends of said door jambs rest the flanges 4 of an I-beam 6, said flanges extending in vertical planes and the central member extending in a horizontal plane. In the lower portions of said flanges are mounted the ends of horizontal shafts 7, best shown

in Figs. 3, 4, there being in the present instance eight of said shafts. Each shaft 7 supports three flanged rollers 8, 9, 11. Over the rollers 8 extend, three to the right and three to the left, six chains 12, 12', which are attached to the eyes of eye-bolts 13 extending vertically through an upper door 14 and are connected to common chains 15, from which are suspended counterweights 16, which move vertically in grooves 17 in the outer sides of the door jambs 1. In like manner six chains 18 are attached to the eyes of the eye-bolts 20 extending vertically through a lower door 19 and, after extending over the rollers 9, three to the right and three to the left, are connected to common chains 21 which are attached to similar counterweights 22. Five chains 23 are attached to screw eyes 24 screwed into the lower portion of the frame of the lower door 19 and extend upwardly and around the rollers 11 to the right and are attached to a common chain 25 which extends around a windlass 26 suitably supported on the floor at the right hand side of the door, and which has a crank handle 27 with a ratchet 28 and a pawl 29 to hold the doors raised as high as may be required. The windlass 26 has deep flanges 30, 31, to prevent the chains from working off as the doors are raised.

The doors 14 and 19 are similar in form and extend each the full width of the doorway and must be so constructed as to withstand wind pressure amounting to 25 or 30 tons, and hence must be heavily braced and properly connected to their supports to prevent them from being destroyed in a high wind. Thus, each door is formed with a rectangular frame 32 reinforced throughout its whole length by channel-shaped metal 33 and having suitable diagonal braces 34 and uprights 36.

The upper door 14 slides vertically between fixed stops 37, 38, which extend the full height of the jamb, while the lower door 19 in the upper part of its movement slides between the fixed stops 38 and fixed stops 39 which extend only between the same levels as the truss 2, and in the lower part of its movement the lower door 19 slides between the fixed stops 38 and movable stops 40. The movable stops 40 are supported on rollers 41 secured on the floor 42 and are

retained in place against movement outward from the door by means of upper and lower brackets 43, 44, there being a pair of such brackets for each movable stop 40.

5 The eye-bolts 13, 20 extend through plates 48 on the top of the doors, 14, 19, respectively, each of said plates extending transversely outward beyond the upper edge of the door, and having a depending pin 49, 10 which pins pass into holes in plates 51 attached to, and extending inwardly from, the lower edges of the truss 2 and the door 14 respectively, the object being to connect the upper door to the truss and the lower 15 door to the upper door in their closed positions to maintain them in proper positions relative to each other and to offer their combined resistance to wind pressure.

In order to brace the doors when in their 20 closed position, the lower door 19 is provided with three braces 52, which at their upper ends are formed with hooks 53 which engage screw eyes 54 screwed into the upper portion of the door 19. The lower 25 ends of the hooks are formed with flattened and enlarged heads 56, which when the door is in a closed position, engage T-shaped slots 57 in plates 58 secured to the floor above recesses 59 therein. When the door 30 is to be elevated, these heads are removed from the slots 57, and the braces 52 are swung from the position in which they extend obliquely in planes at right angles to the door 19, to positions in which they extend 35 obliquely in a plane parallel with said door 19, and they are supported in said positions by their lower portions, immediately above the heads, being received in the bent portions of screw hooks 61 screwed into the 40 lower side of the rectangular frame 32 of the door at a proper distance from the respective uprights, as shown in dotted lines in Fig. 1.

In order to hold the lower door 19 in a 45 proper position, U-shaped plates 62 are connected to the floor to receive its lower edge.

Since the movable stops 40 are pivotally supported on the rollers 41 back of their centers of gravity, they swing outward upon 50 said rollers under the door 19 when said door is raised above the level of the tops of said stops. In order to remove the stops from this position to permit the door 19 to be lowered, there are provided cables 63 55 which pass through eye-bolts 64, 65, 66, 67, 68, and down to a point within reach of an operator near the windlass 26, one of said cables being shorter than the other and connected to the longer cable, so that, when 60 the operator pulls down on the longer cable, both stops 40 will be moved out from beneath the door 19 and will allow it to descend by gravity.

In order to prevent the wind from dis- 65 turbing the doors when they are raised, the

door 19 is provided at the bottom with a plurality of outwardly extending brackets 69, having upturned ends 71 and each having a hole 72, said holes being adapted to receive the lower ends 73 of the eye-bolts 13 70 extending through the upper door 14, and the upturned ends 71 engaging the lower portion of the truss 2.

The bracket 69 not only serves to connect the two doors together when they are being 75 raised, but also serves the purpose of lifting the upper door.

While chains are referred to for the support of the doors, it will be evident to those skilled in the art that any suitable cables 80 or ropes may be used in their place.

I claim:

1. Aeroplane hangar doors comprising a pair of door jambs, a truss connecting their tops, a pair of doors slidable in said jambs, 85 a pair of movable jambs adapted to hold the lower door when raised, means to connect the two doors together when lowered, means to connect to the truss the upper door 90 when lowered, a rigid brace detachably connecting to the floor the upper edge of the lower door when in its closed position, and manual means for raising the lower door, and a bracket carried by the lower door for raising the upper door.

2. Aeroplane hangar doors comprising a pair of door jambs, a truss connecting the tops of the jambs, a pair of doors each 95 slidable in said door jambs, means to connect the doors together when lowered, means to connect to the truss the upper door 100 when lowered, counterbalancing means for the doors, means for raising the doors, and a bracket carried by the lower door and adapted to connect the two doors together 105 when raised and to secure the two doors to the truss.

3. Aeroplane hangar doors comprising a pair of door jambs, vertically slidable doors supported therein, counterbalancing means 110 for said doors, manual means adjacent to one of the door jambs for raising and lowering the doors, and a pair of stops, pivoted at their lower ends, their upper ends being 115 movable into positions beneath the lower edges of the doors to hold the doors in their raised position.

4. Aeroplane hangar doors comprising a pair of door jambs, vertically slidable doors supported therein, counterbalancing means 120 for said doors, manual means adjacent to one of the door jambs for raising and lowering the doors, a pair of movable stops adapted to hold both doors raised, and manual means adjacent the first named 125 means for removing the stops from beneath one of the doors to permit the doors to descend.

5. Aeroplane hangar doors comprising a pair of door jambs, a truss connecting the 130

jambs, a pair of doors slidable in said jambs, means to connect them together when lowered, means to connect to the truss the upper door when lowered, counterbalance 5 weights for the doors, manual means for raising the lower door, a bracket carried by the lower door and adapted to connect the two doors together and to the truss when raised, means to support the two doors when raised, and manual means for removing the 10 support from the doors when they are to be lowered.

FREDERICK W. DOST.