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P. RÖHR ET AL  
ASSEMBLY ARRANGEMENTS FOR POWER  
TRANSMISSION IN AIRCRAFT  
Filed Dec. 5, 1940

Serial No.  
368,646

2 Sheets-Sheet 1

Fig. 1

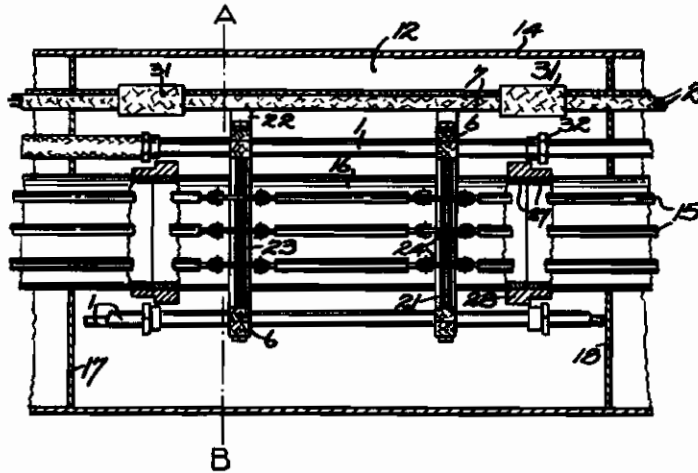
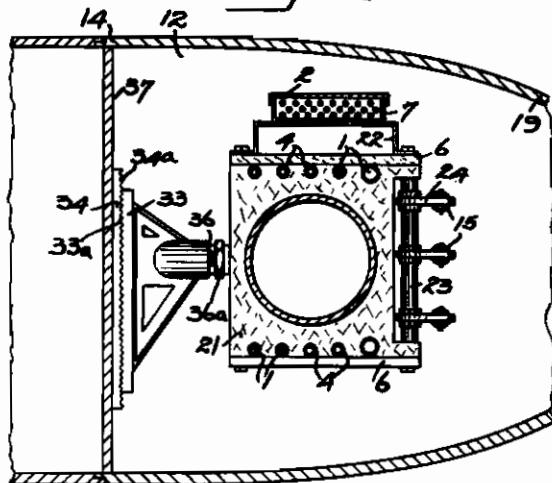


Fig. 2



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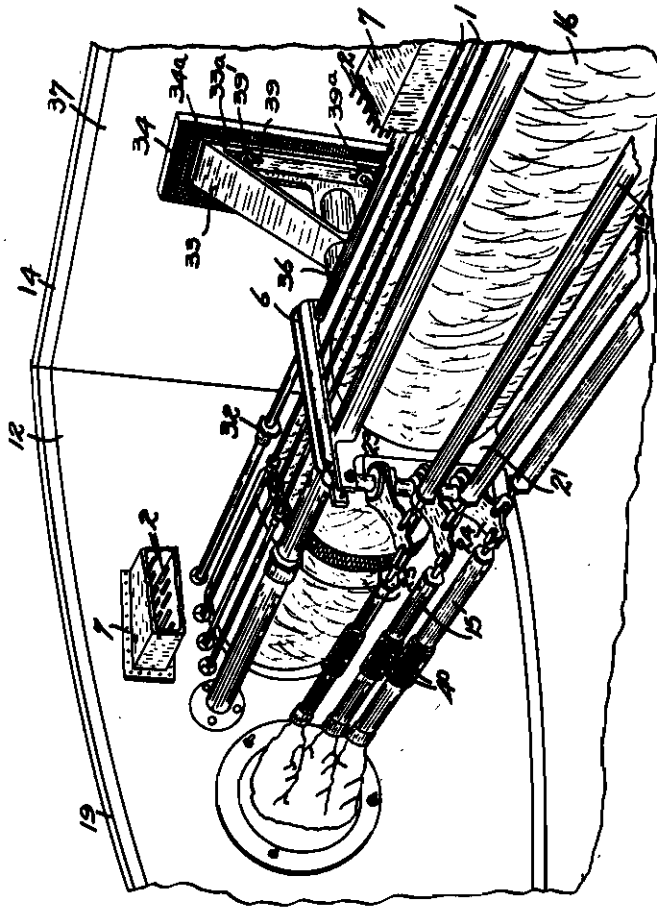


Fig. 3-

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# ALIEN PROPERTY CUSTODIAN

## ASSEMBLY ARRANGEMENTS FOR POWER TRANSMISSION IN AIRCRAFT

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Application filed December 5, 1940

This invention relates to improvements in assembly arrangements for power transmission in aircraft, and refers to such arrangement for the transmission of electrical, mechanical, hydraulic and pneumatic power.

It is an object of the invention to provide such an assembly arrangement whereby the slow and tedious work of assembling the various power transmission lines (such as wiring, rods and piping), individually within the cramped space found in wings and other parts of an airplane may be eliminated, thereby both simplifying and speeding up the work.

Another object of the invention is to provide such an assembly arrangement wherein the total assembly consists of a plurality of sections each complete in themselves prior to being mounted in position, so that detachable connections provided on the extremities of the several parts on each section only need to be secured to corresponding connections provided on the adjacent extremities of the several parts on the adjoining section, thus permitting rapid installation or removal of any one of the sections.

A further object of the invention is to provide such an assembly arrangement wherein a rigid heating pipe forms the backbone of each section and heat therefrom warms the hydraulic and pneumatic piping and insures a free flow of the power medium in the latter.

Yet another object of the invention is to provide such an assembly arrangement including a rigid heating pipe in each section having transverse panels mounted thereon which support all the various power transmission lines in that section and hold them in correct spaced relation.

Still another object of the invention is to provide such an assembly arrangement with means for supporting the panels from a wall provided in the airplane part in which the installation is made so that the panels may be adjusted both vertically and horizontally relative to the wall to facilitate the aligning of the sections with one another.

Having thus stated some of the objects and advantages of the invention I will now proceed to describe it in detail with the aid of the accompanying drawings, in which:

Figure 1 illustrates a longitudinal sectional view of a portion of an airplane wing wherein the invention is installed.

Figure 2 is a section on the line A—B of Figure 1.

Figure 3 is a perspective view showing a por-

tion of the assembly arrangement with the wiring duct partly broken away.

Referring to the drawings, within an airplane wing 14 a hollow space 12 is defined between parallel transverse walls 17 and 18, a longitudinal wall 37, and the nose 19 of the wing which may be removable to facilitate access to the assembly mounted therein.

Each section of the assembly includes a centrally disposed rigid longitudinal member preferably a heating pipe 16 having threaded extremities 27. When all the sections of this heating pipe 16 are connected they may extend, for example, from an engine (not shown) upon the wing 14 to a heater (not shown) in a cabin (not shown). Supported around each length of pipe 16 are a plurality of transverse panels 21 having suitable openings 4 formed therein to receive and support piping 1 constituting sections of the hydraulic or pneumatic lines or both. 6 denotes clamping bars extending across the tops and bottoms of the panels 21 to retain the several portions of the piping 1 in correct spaced relation; these bars are held in position as by bolts 23. Pivotaly supported on the latter are levers 24 to which adjacent ends of rods 15 are secured, through the movement of which latter power is mechanically transmitted. Mounted on the upper clamping bars 6 are rests 22 which support a wiring duct 7 extending between them and having electric wires 2 therein. Projecting laterally from the panels 21 and supported for rotation thereon are nuts 36'.

Mounted at spaced intervals on the wall 37 are bolsters 34 inwardly from which studs or other suitable fastening means 39' project. Resting against the opposite face of the bolsters 34 are brackets 33 having vertically slotted holes 39 therethrough through which the fastening means 39' extend so that the said brackets may be vertically adjusted prior to the tightening of nuts 39a on the said fastening means. It will also be noted that in order to facilitate the vertical adjustment of the brackets 33 the contacting faces 33' of the latter and 34' of the bolsters 34 are horizontally serrated. Projecting horizontally from the brackets 34 are threaded connections 36 to receive the nuts 36'. Thus by rotating the latter the distance between the wall 37 and the axis of the heating pipe 16 in each section may be varied so that each section of the assembly may be quickly and easily brought into alignment with the other sections.

When the individual sections are in position the adjacent ends of the heating pipe sections 16 are

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detachably connected as by nuts 20 which engage the threaded extremities of two adjacent pipe ends; the adjacent ends of lengths of piping 1 are detachably connected as by union nuts 32; the adjacent ends of the ducts 7 are connected by junction boxes 31 wherein the wiring extending through the separate ducts is suitably connected; and suitable detachable connections 40 are employed connecting adjacent ends of aligned pairs of rods 15 in adjacent sections.

It will thus be noted that each section of the assembly is completely pre-fabricated, and after installation it is merely necessary to connect the lengths of heating pipes 16, the hydraulic and pneumatic piping 1, the ducts 7 and the wires 2

therein, and the rods 15 through movement of which mechanical power is transmitted, to the corresponding parts of adjacent sections. If repairs are needed a defective section may be quickly removed and another easily substituted. The size and rigidity of the lengths of heating pipe 16 render each section amply strong to withstand distortion in ordinary handling, and the provision of heat in the pipe 16 prevents the power media in the hydraulic and pneumatic piping 1 from freezing, thus insuring satisfactory flow to the mechanisms operated thereby.

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