

ABOUT THE SYNTHESIS OF THE MAIN MECHANISM OF THE RETRACTABLE AIRCRAFTS' LANDING GEAR

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Abstract. Based on the construction analysis of several landing gear retractable mechanisms we have presented a general method to generate and classify these mechanisms [2, 3]. Retractable mechanisms may include three subassemblies (fig. 1): a main mechanism (MM), built based on a bar (plane or space) mechanism; a driving mechanism (DM), represented by a pivoted slider mechanism; a wheel turning mechanism (WTM), also built based on a bar mechanism. This last mentioned mechanism is available only in some special construction. In order to generate and classify retractable mechanisms, we take into account the structural characteristics of the first two mechanisms only.

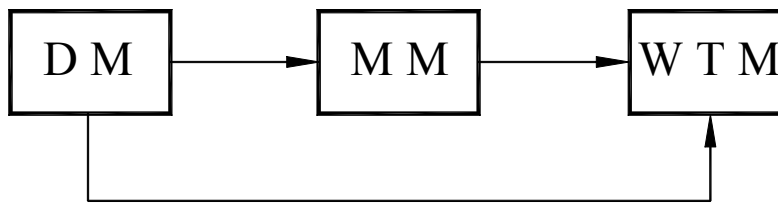


Fig. 1 Block diagram of retractable mechanism

The main mechanism is formed in the general case of a strut (the element that supports the wheels), and a bracing strut. Often, the (MM) used is a planar four-bar mechanism. The (MM) may be with folding bracing strut (FBS), or with folding strut (FS). The goal of this paper is to generalize previously obtained results on the double loop retractable mechanism of landing gear aircraft. In earlier works has been found that the main mechanism must originate from a simple type planar four-bar mechanism. Here, we perform a more detailed analysis of the solutions resulting from the constraint set on the simple type geometrical quadrilaterals. The obtained results are illustrated for retractable mechanisms with folding bracing strut and folding strut, respectively.

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