

May 18, 1926.

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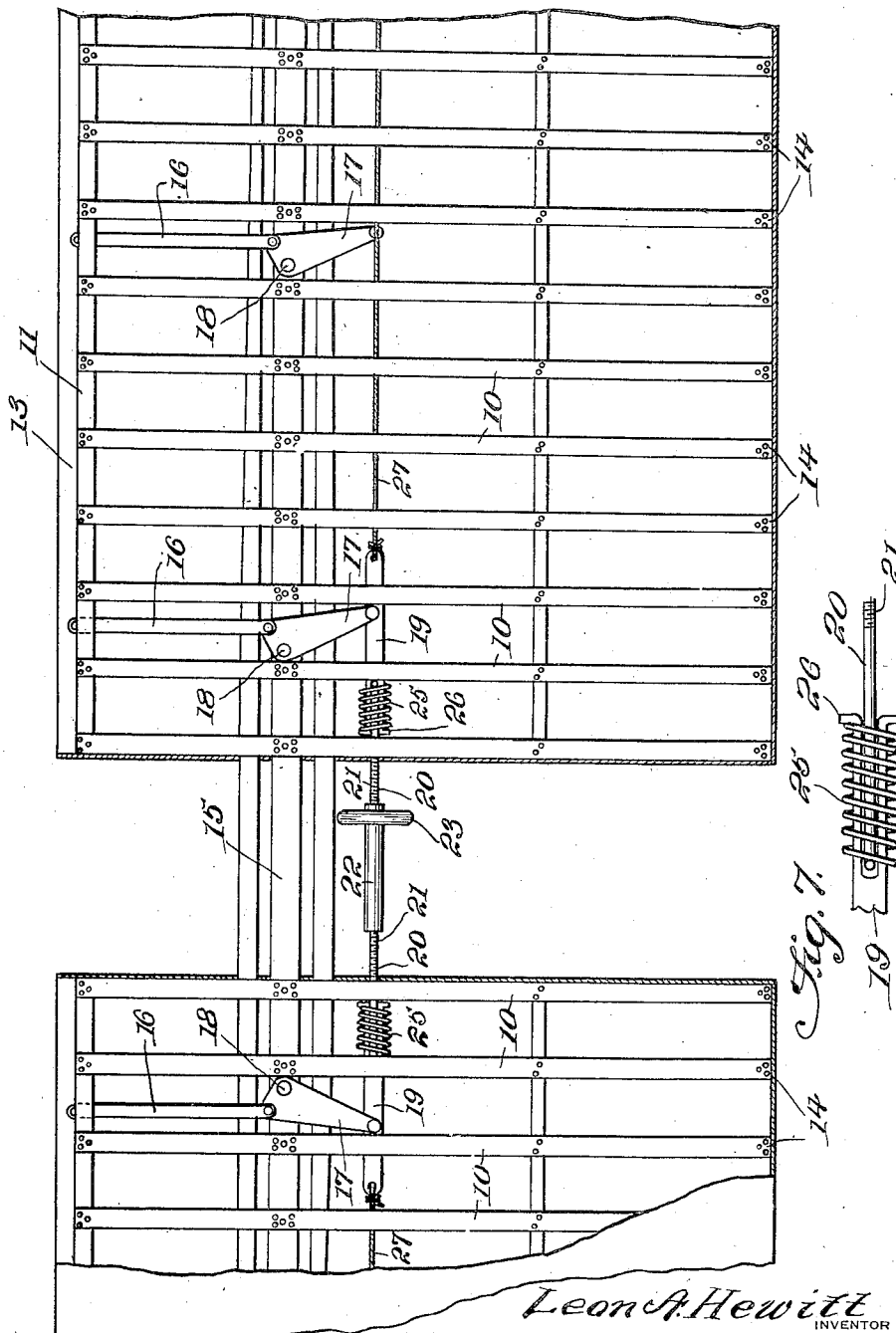
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AEROPLANE

Filed May 9, 1924

2 Sheets-Sheet 1

Fig. 1.



WITNESS: *J. L. Wright*

Leon A. Hewitt  
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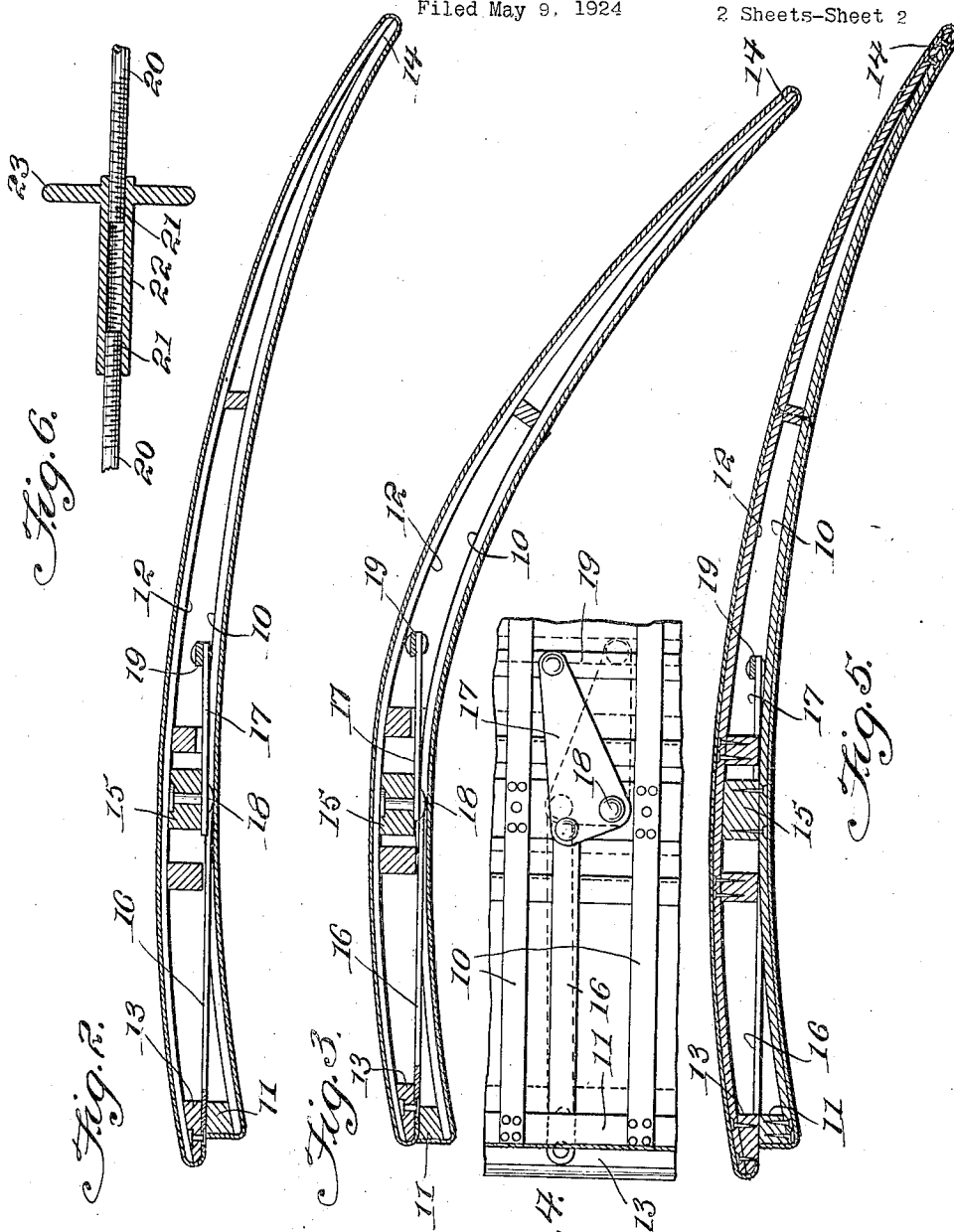
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AEROPLANE

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2 Sheets-Sheet 2



*J. L. Wright*  
WITNESS:

*Fig. 1.*  
*Fig. 2.*  
*Fig. 3.*  
*Fig. 4.*  
*Fig. 5.*  
*Fig. 6.*  
*Fig. 7.*  
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Patented May 18, 1926.

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# UNITED STATES PATENT OFFICE.

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## AEROPLANE.

Application filed May 9, 1924. Serial No. 712,089.

This invention relates to aeroplanes, and has particular reference to an improved wing construction and means whereby the curvature and pitch of the wings can be varied, to obtain a wider range of speed with a minimum amount of power.

Another object of the invention resides in providing a wing construction including relatively movable sections designed so that one balances the other, the relative movement of the sections allowing the curvature and pitch of the wings to be varied.

The nature and advantages of the invention will be better understood when the following detailed description is read in connection with the accompanying drawings, the invention residing in the construction, combination and arrangement of parts as claimed.

In the drawings forming part of this application, like numerals of reference indicate similar parts in the several views, and wherein:

Figure 1 is a fragmentary plan view of a plurality of wings showing how they are simultaneously adjusted in accordance with the present invention.

Figure 2 is a sectional view through one of the wings.

Figure 3 is a similar view showing the wing adjusted to increase the curvature thereof.

Figure 4 is a fragmentary view showing the means for adjusting said wing.

Figure 5 is a sectional view through the wing showing how the spacing elements are connected therewith.

Figure 6 is a sectional view through the means for simultaneously adjusting a plurality of wings.

Figure 7 is a view showing the cushioning element used in conjunction with the adjusting means.

Referring to the drawings in detail, A indicates generally an aeroplane wherein the wings are indicated at B.

In accordance with the present invention, each wing includes upper and lower sections, the lower sections consisting of spaced parallel strips 10 connected at one end with a cross strip 11, while the upper section is made up of the same number of strips 12 which are slightly curved throughout their length as shown. The strips 12 are connected to the cross piece 13 which is slightly

wider than the cross piece 11 above referred to and arranged in parallel contacting engagement therewith. The opposite corresponding extremities of the wing sections are connected together in any suitable manner as at 14. Arranged between the respective sections of the wing are spaced elements in the nature of transverse strips 15 edge-wise disposed. One of these spacing members has its opposite edges connected to the respective sections of the wing, while the other spacing member is only connected to the strips 10 of the lower section, but bears against the strips of the upper section. The parts are so arranged and connected together that one section normally balances the other, but when a pull is exerted upon the cross piece 13 of the upper section it tends to slightly increase the curvature of the wing and at the same time change the pitch thereof, through which operation the transverse strip 11 of the lower section is also permitted a slight relative movement with relation to the cross piece 13.

It is to be understood that this type of wing can be used in single, double or more plane machines, and the wings simultaneously and uniformly controlled. For this purpose the cross piece 13 of each wing is connected with one end of a reciprocating rod 16, the other end of which is connected with a lever 17 fulcrumed as at 18. The other end of this lever is connected with a cross rod 19 which is hollow adjacent one end to receive the adjacent section 20 of a threaded rod. These sections 20 are oppositely threaded as at 21 into a tubular or sleeve like member 22 equipped with a hand wheel 23, and it is manifest that when the wheel is turned in one direction the levers 19 are moved upon their fulcrums toward each other to move the cross pieces 13 of the wing structure in the same direction and thus slightly increase the curvature and also change the pitch of the wing. When the wheel is turned in an opposite direction, the wing sections are allowed to return to their normal positions, incident to the reverse movement of the levers 17. If more than two wings are used, the levers of the different wing structures are connected with the cross rod 19 by cables 27. A cushioning spring 25 surrounds the hollow portion of the cross rod 19, having one end bearing against the flange 26 and its other end con-

nected with the adjacent section 20 of the threaded rod.

While it is believed that from the foregoing description, the nature and advantages of the invention will be readily apparent, I desire to have it understood that I do not limit myself to what is herein shown and described, and that such changes may be resorted to when desired as fall within the scope of what is claimed.

Having thus described the invention, I claim:

1. In an aeroplane, a wing including upper and lower sections, each section comprising spaced flexible members, a cross piece connecting the members of each section, with said cross pieces arranged in contacting engagement, a rod connected with the cross piece of one section and mounted for sliding movement, a lever mounted for pivotal movement and pivotally connected with said rod, a lever pivotally connected with the first mentioned lever and arranged for movement in a plane at a right angle with said rod, and operable to flex one section of the

wing with relation to the other to increase the curvature and pitch of the wing for the purpose specified.

2. In an aeroplane, a plurality of wings, each wing including upper and lower sections, each embodying a plurality of flexible elements, cross pieces connecting the elements of each section, with said cross pieces arranged in contacting engagement, a rod connected with the cross piece of one section and mounted for sliding movement, a pivoted lever having pivotal connection with said rod, an operating lever pivoted with the first mentioned lever and movable in a plane at a right angle to said rod, threaded rods associated with the last mentioned levers of the respective wings, a turn buckle connecting said threaded rods, whereby said last mentioned levers are simultaneously actuated to flex and vary the curvature and pitch of said wings, and a cushioning element connecting the said rods with said levers for the purpose specified.

In testimony whereof I affix my signature.  
LEON A. HEWITT.