

J. KOIW.
AIR CRAFT PROPELLER.
APPLICATION FILED SEPT. 7, 1911.

1,040,695.

Patented Oct. 8, 1912.

3 SHEETS—SHEET 1.

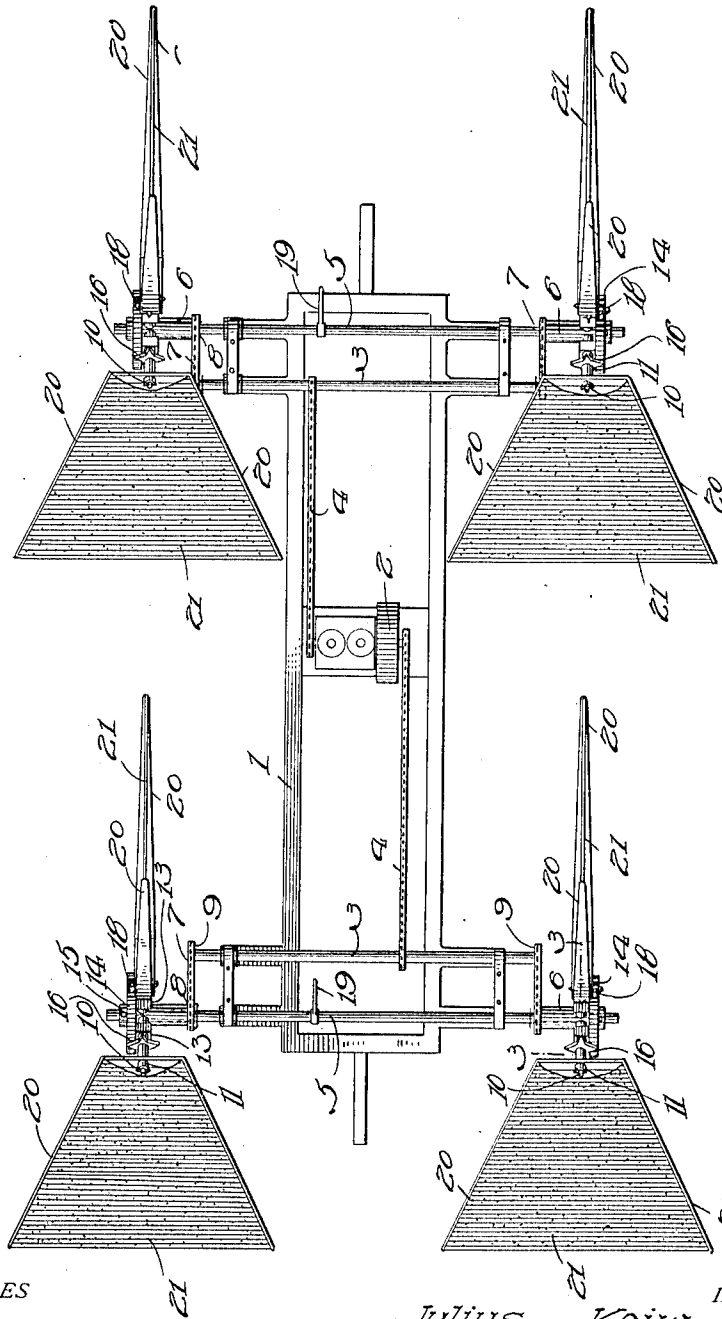


Fig. 1.

WITNESSES

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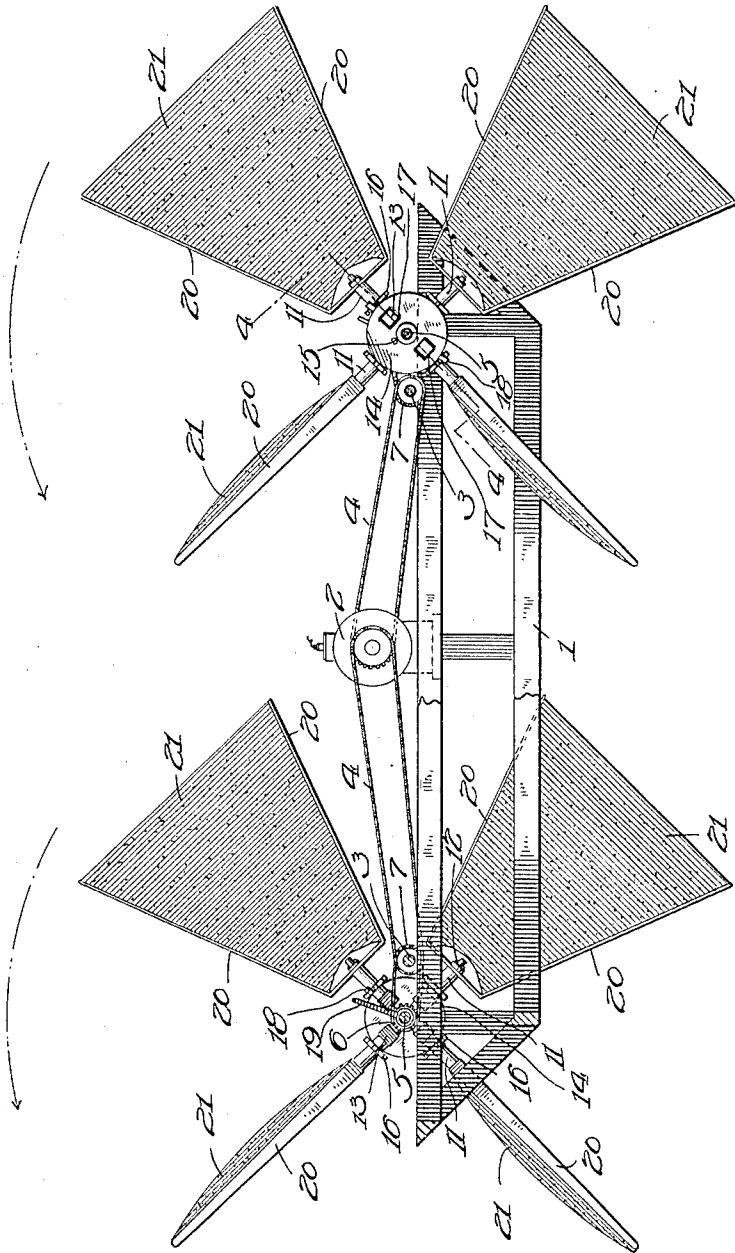


Fig. 2.

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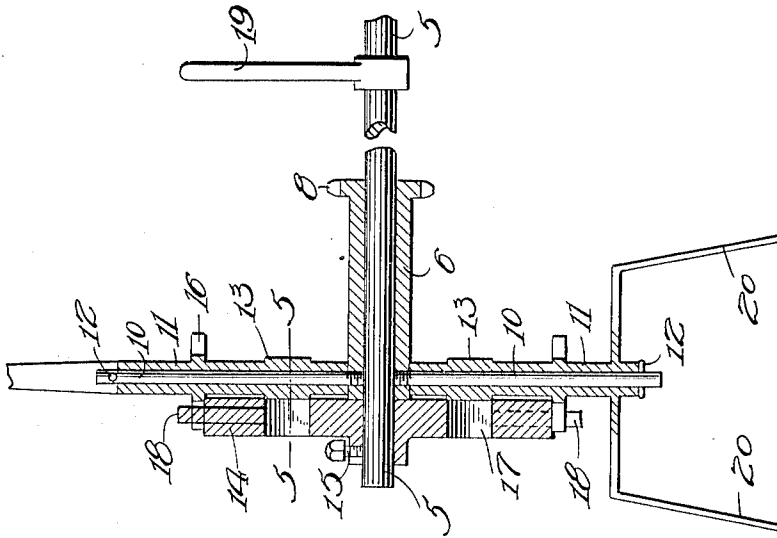


Fig. 4.

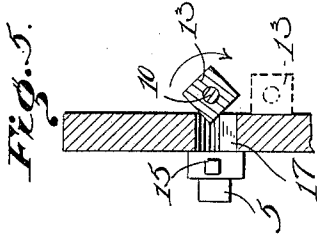


Fig. 5.

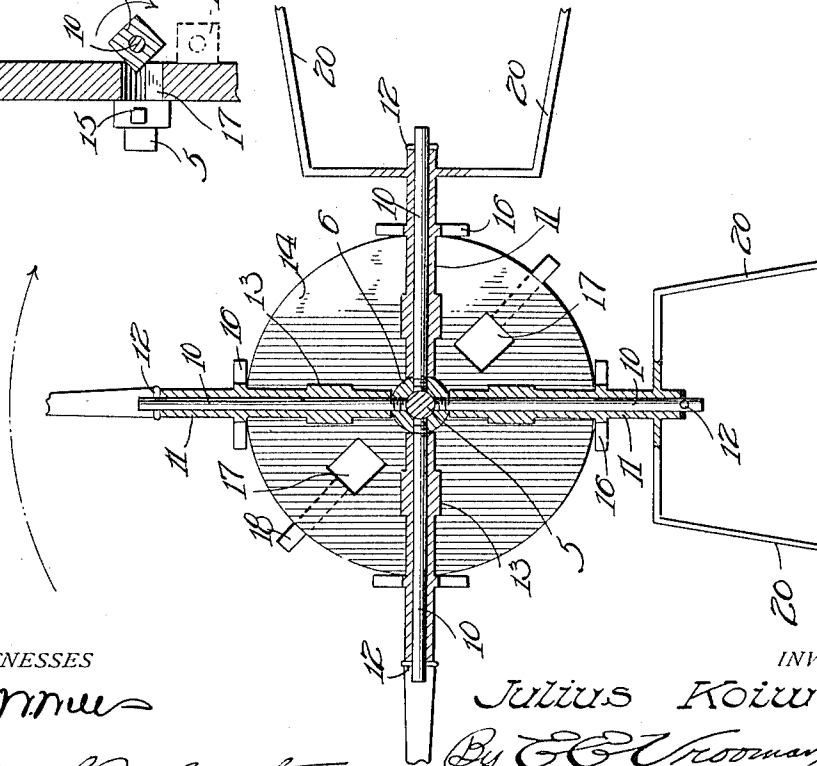


Fig. 3.

WITNESSES

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UNITED STATES PATENT OFFICE.

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AIR-CRAFT PROPELLER.

1,040,695.

Specification of Letters Patent.

Patented Oct. 8, 1912.

Application filed September 7, 1911. Serial No. 648,036.

To all whom it may concern:

Be it known that I, JULIUS KOIW, a citizen of the United States, residing at Port Arthur, in the county of Jefferson and State of Texas, have invented certain new and useful Improvements in Air-Craft Propellers, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to propelling means for aeroplanes and the like, and has for its object the provision of means for facilitating the propulsion of a machine by reducing the resistance upon the air by the
15 propelling blades.

Another object of this invention is the production of a device for turning the blades a definite amount to allow the same to easily cut the air on their upward stroke.

20 With these and other objects in view this invention consists of certain novel constructions, combinations and arrangements of parts as will be hereinafter fully described and claimed.

25 In the drawings Figure 1 is a top plan view of the machine. Fig. 2 is a side elevation thereof partly in section. Fig. 3 is an enlarged vertical section taken on line 3—3 Fig. 1. Fig. 4 is a vertical section of the
30 blade turning device. Fig. 5 is an enlarged section taken on line 5—5 of Fig. 4.

Referring to the drawings by numerals 1 designates a frame which carries the usual motor 2, which motor is connected to the driving shafts 3 by means of sprocket chains 4. It will, of course, be obvious that the frame 1 may be provided with the usual planes, guiding mechanism, etc., which are common to the usual type of an aeroplane and this portion of the structure has not been disclosed in the present device for the reason that the important feature of the invention may be more clearly illustrated by eliminating the planes etc. A propeller
45 driving shaft 5 is carried near each end of the frame 1 and these shafts 5 carry near each of their ends a propeller blade supporting shaft or collar 6. This collar 6 is driven by means of a sprocket chain 7, which
50 sprocket chain 7 engages a sprocket wheel 8 carried by the collar 6. The chain 7 is driven by means of the sprocket wheel 9 carried by the shaft 3.

55 A plurality of radially divergent rods 10 are secured near the end of the sleeve 6 and the shaft portions 11 of the propeller

blades fit over the rods 10 and are held in place by means of cotter pins 12. The shaft portions 11 are provided near their inner ends with a square portion 13 which squared
60 portion is adapted to fit snugly against the side of the disk 14, which disk is keyed to the shaft 5 by means of a screw 15. A fingered wheel 16 is carried by each of the shafts 11 near the outer ends of the shaft
65 11. The disk 14 is provided with a pair of apertures 17 of approximately the same size as the squared portion 13 of the shaft 11 and is adapted to allow the shaft to rotate one quarter of a turn as will be hereinafter
70 described. A pin 18 is placed upon the periphery of the disk 14 just outside of the apertures 17 and this pin is adapted to engage the fingered wheel 16 thereby causing the blades to turn as the shaft 5 is rotated.
75 It will, of course, be obvious that as the shaft turns the one corner of the squared portion 13 of the shaft 11 will fit in the aperture 17 thereby making it possible to turn the shaft 11 which otherwise could not
80 happen owing to the fact that the flat face of the squared portion 13 fits snugly upon the face of the disk, thereby allowing one quarter of a turn only, and preventing the continuous rotation of the shaft which
85 otherwise might occur.

An operating lever 19 is keyed to the shaft 15 and the disk 14 may therefore be rotated to different positions so as to control the angle of the propeller blade. In
90 the position of the blade shown in the official drawings, especially in Figs. 1 and 2, the disk is so arranged as to elevate the machine. When it is desired to merely drive the plane forward or in other words in the
95 direction of the arrows disclosed in Fig. 2, the shaft may be rotated thereby changing the angle of the opening 17 so as to have the broad face of the blades to operate against the air only after having approxi-
100 mately made one-half of its forward stroke. Of course, the turning of the blades is regulated by the contact of the pins 18 with the fingered wheel 18 and it will therefore
105 be obvious that by rotating the disk 14 in different directions the desired function may be obtained for driving the machine in its desired direction.

The blades comprise a frame 20 to which is attached a covering of canvas or other
110 suitable material 21. The frame 20 is formed of divergent arms so as to make the

blades broader at their outer ends than at their inner connecting ends.

From the foregoing description it will be obvious that the machine may be readily
5 rotated in almost a vertical plane, and the blades may also be adjustable so as to readily propel the machine in a forward direction, this being accomplished through the medium of one lever. From the structure above de-
10 scribed it will be obvious that a device has been produced which is very simple in construction, efficient in operation, and consists of a comparatively small number of parts, thereby greatly reducing the weight of the
15 machine.

What I claim is:—

A device of the class described comprising a shaft, a driving sleeve, a plurality of supporting rods carried thereby, propeller
20 shafts carried by said rods, propeller blades carried by said propeller shafts, a disk carried by said first-mentioned shaft, said disk

being provided with a plurality of oppositely disposed apertures, a pin carried by the periphery of said disk just in alinement
25 with each of said apertures, a squared portion carried by said propeller shafts, a fingered wheel carried by said shaft being adapted to engage said pin for rotating said propeller shaft and said squared portion being adapted to fit in one of said slots at the
30 same time said pin engages said fingered wheel for allowing said propeller sleeve to rotate one-quarter of a turn, and means engaging said shaft for rotating said disk
35 whereby the rotation of said propeller blades may be adjusted.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

JULIUS KOIW.

Witnesses:

L. R. JONES,
EDW. BARBAY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."