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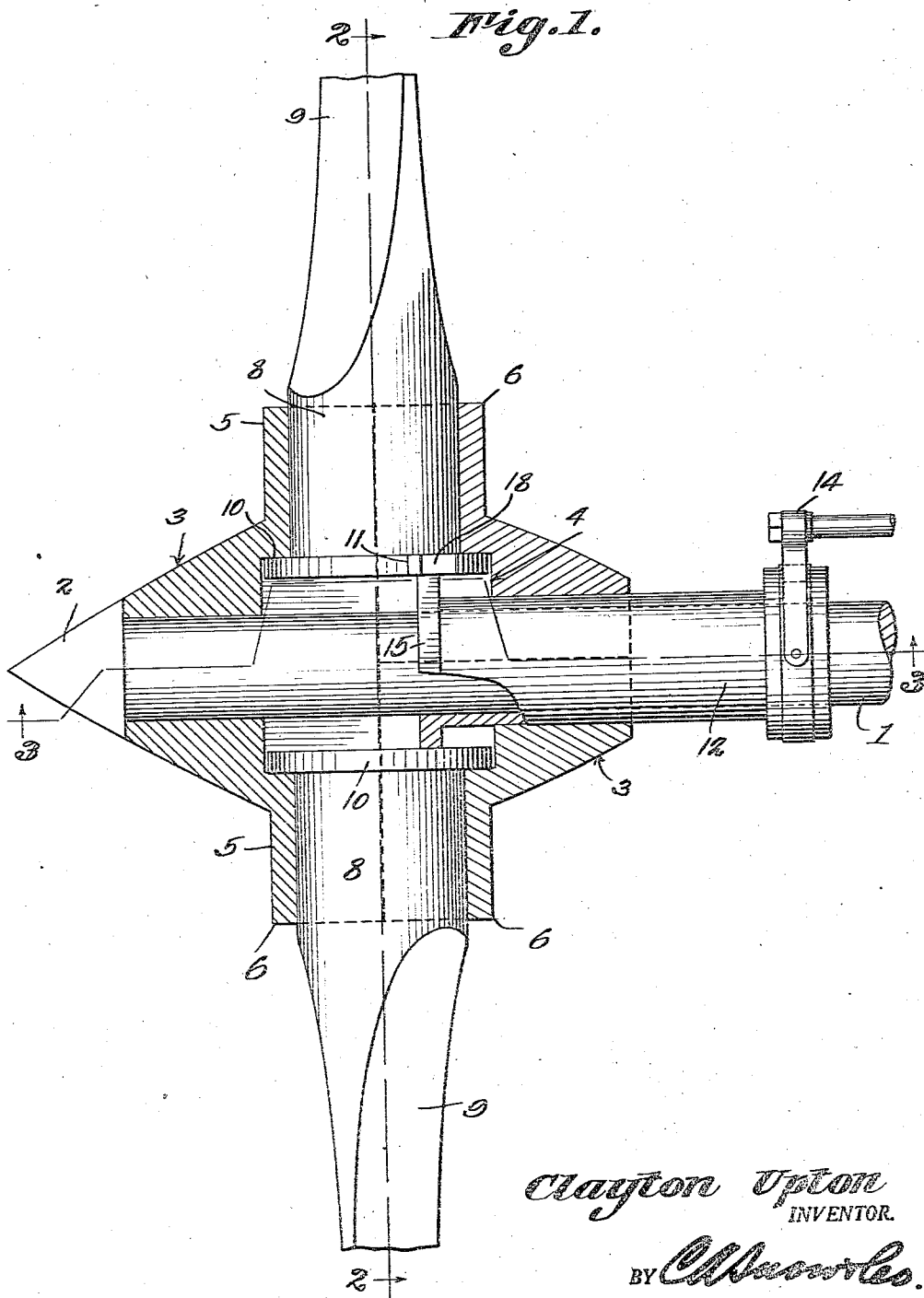
C. UPTON

2,269,833

PROPELLER

Filed Jan. 11, 1941

2 Sheets-Sheet 1



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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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PROPELLER

Clayton Upton, Chester, Ill.

Application January 11, 1941, Serial No. 374,121

1 Claim. (Cl. 170-163)

This invention aims to provide a simple but effective means for changing the pitch of the blades of a propeller, for example, the propeller of an airplane.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the present invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

In the drawings:

Fig. 1 shows in side elevation, a device constructed in accordance with the invention, parts being sectioned away;

Fig. 2 is a section on the line 2-2 of Fig. 1;

Fig. 3 is a section on the line 3-3 of Fig. 1.

The numeral 1 marks a drive shaft, commonly propelled by an internal combustion engine on an airplane. The drive shaft 1 has a terminal stop 2.

The hub 3 of a propeller is secured to the drive shaft 1, in abutment with the stop 2. The hub 3 has an internal chamber 4, preferably of rectangular form. The hub 3 is supplied with laterally outstanding bearings 5. The hub 3 may be composed of any desired number of separable parts 6, held together by securing elements 7.

Oppositely disposed shafts 8 are mounted to rock for adjustment in the bearings 5. The shafts 8 carry propeller blades 9. Disk-like heads 10 are secured to the inner ends of the shafts 8, and may be considered as parts of the shafts. In their peripheries, the heads 10 have parallel-sided notches 11, which form guides. The guide 11 of one head 10 is disposed 180 degrees remote from the guide of the other head. The heads 10 abut against the hub 3 at the outer or lateral ends of the chamber 4.

A tubular slide 12 is mounted to reciprocate in one end of the hub 3 and on the drive shaft 1. The means 14 for moving the slide 12 longitudinally is conventional and well understood in the art. At its inner end, the slide 12 is provided with a rectangular foot 15. The foot 15 is engaged between the heads 10 on the shafts 8 of the propeller blades 9, and since the heads engage the hub 3, within the recess 4, as shown in Fig. 1, the slide 12 rotates with the drive shaft 1.

At diagonally opposite corners, the foot 15 is provided with oppositely-projecting, outstanding journal pins 16. The journal pins are of a common diameter from end to end and are mounted

to turn in bearing openings 17 formed in slide blocks 18. The length of each pin 16 is equal to the thickness of the corresponding head 10. The foot 15 moves the slide blocks 18 for reciprocation in the guide notches 11 of the heads 10 on the propeller shafts 8, the slide blocks fitting closely between the foot 15 and the bases of the guide notches 11.

By means of the instrumentality shown at 14, or its equivalent, the slide 12 is moved endwise. The foot 15 participates in the aforesaid movement of the slide 12. The journal pins 16 impart rotation to the heads 10 and to the shafts 8, the slide blocks 18 reciprocating in the guides 11 of the heads 10.

Since the pins 16 are of a common diameter from end to end, the slides 18 are engaged directly by the bases of the guides 11, the slides being engaged, also, by the foot 15, the foot constituting means for retaining the slides on the pins. This strong and compact feature is shown in Fig. 2. The reception of the pins in slots formed directly in the heads 10 is a known construction, but when the slides 18 are employed, a different problem arises. The slides 18 are subjected to much strain, and they should fit closely between the foot 15 and the bases of the guides 11.

The device forming the subject matter of this application is simple in construction, but will be found thoroughly advantageous for the ends to be accomplished, the mechanism being capable of withstanding hard use, and requiring little attention or repair.

Having thus described the invention, what is claimed is:

In a pitch-change mechanism for propeller blades, a drive shaft, a hub secured to the shaft and having a chamber, propeller shafts journaled in the hub, heads on the propeller shafts, within the chamber, and engaging the hub at opposite sides of the chamber, the heads having substantially radial guides, an operating member movable longitudinally of the drive shaft, a foot on the operating member and located in the chamber, the foot being disposed between the heads, slidably, and in engagement therewith to secure rotation of the operating member along with the drive shaft, slides mounted to reciprocate in the guides, and pins carried by the foot and of a common diameter from end to end, the length of each pin being substantially equal to the thickness of the corresponding head, the pins having pivotal engagement with the respective slides, the slides fitting closely between the foot and the bases of the guides.

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