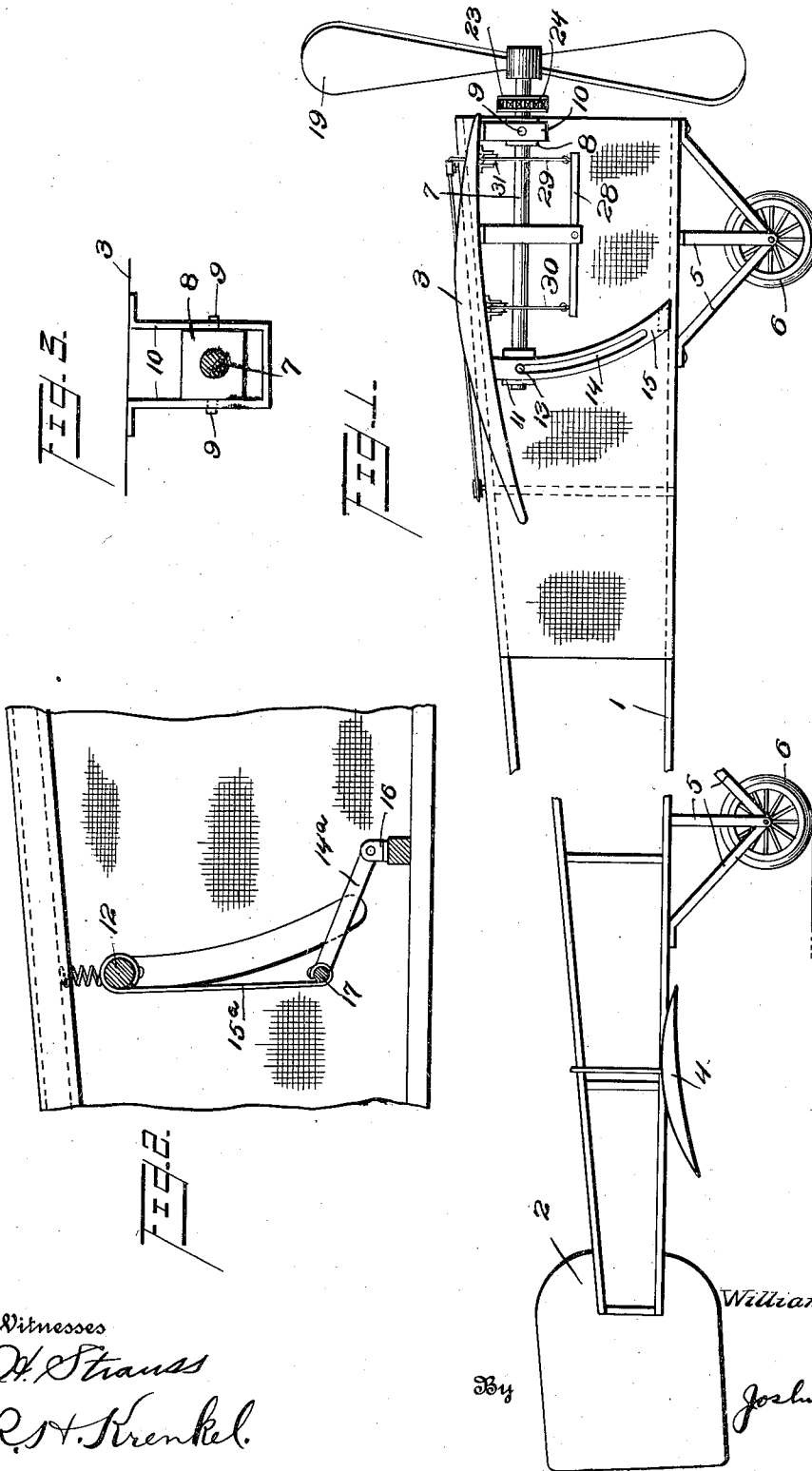


1,000,711.

W. D. BURK.
FLYING MACHINE.
APPLICATION FILED MAY 13, 1911.

Patented Aug. 15, 1911.
3 SHEETS—SHEET 1.



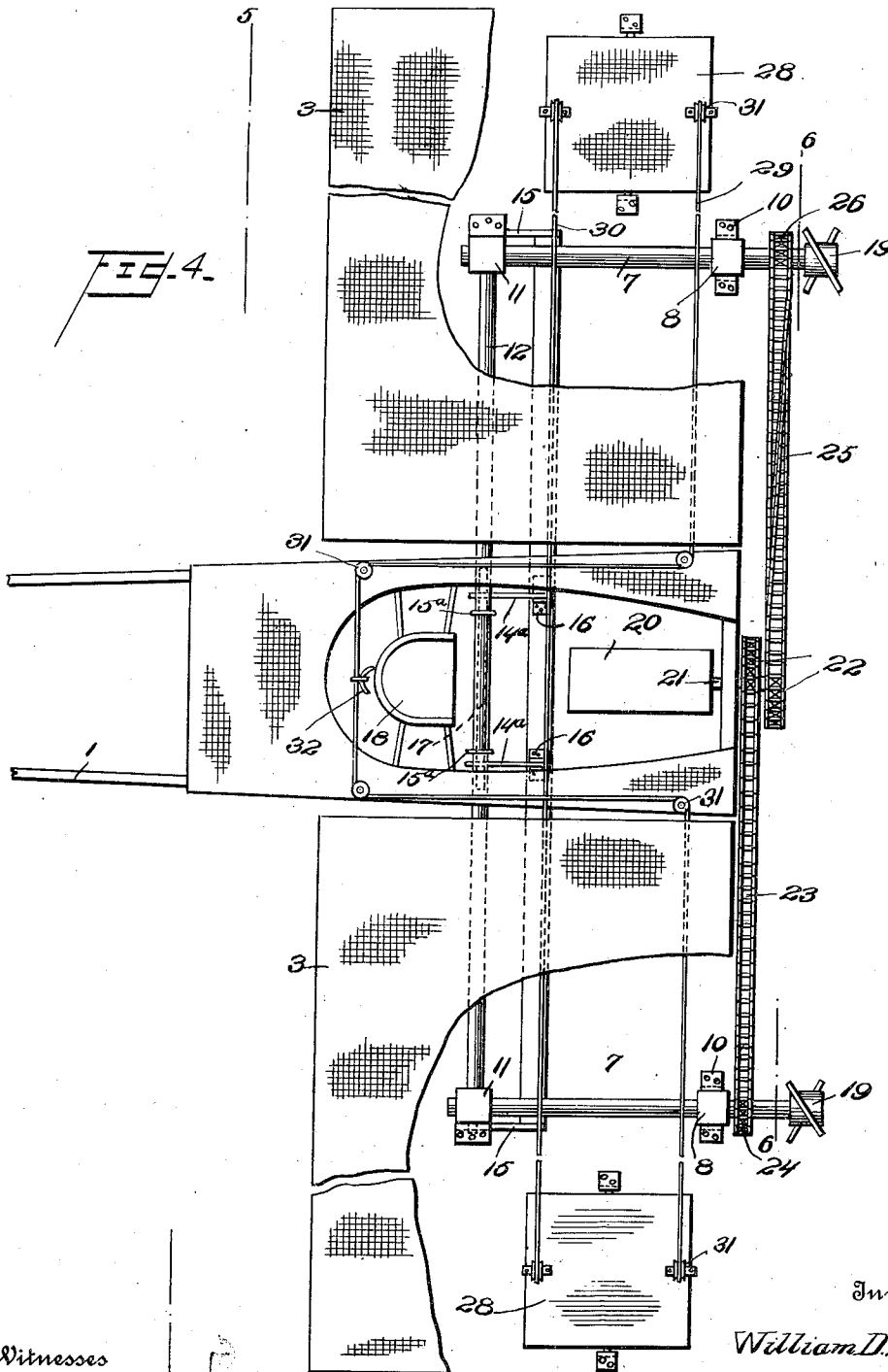
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3 SHEETS-SHEET 3.

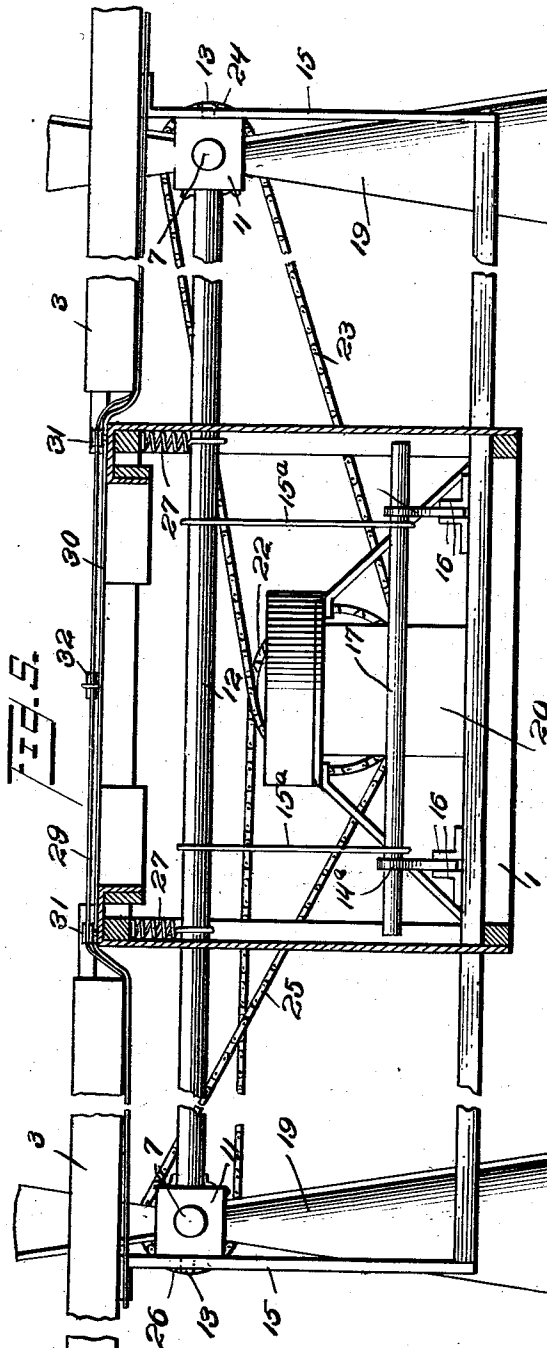
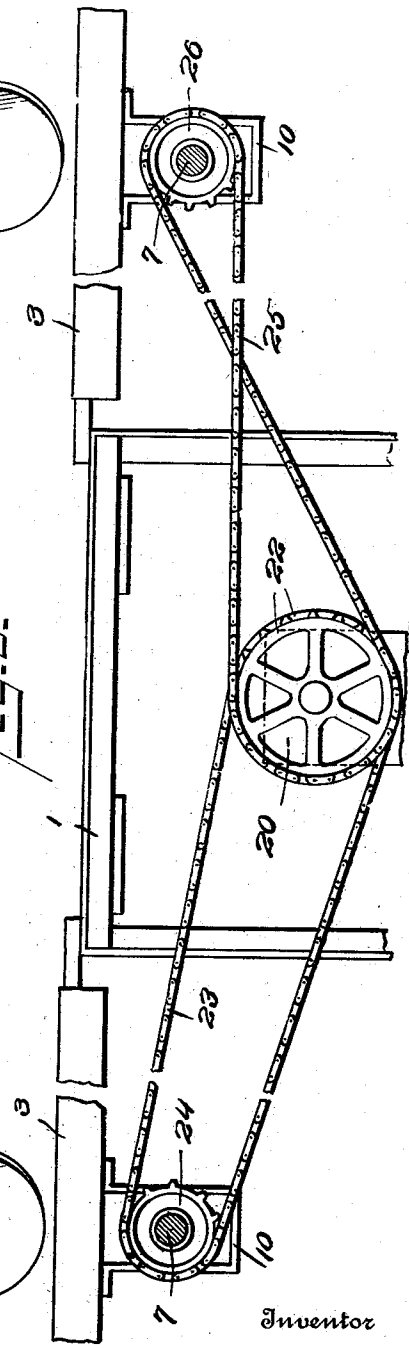


FIG. 5.



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UNITED STATES PATENT OFFICE.

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FLYING-MACHINE.

1,000,711.

Specification of Letters Patent. Patented Aug. 15, 1911.

Application filed May 13, 1911. Serial No. 626,998.

To all whom it may concern:

Be it known that I, WILLIAM D. BURK, a citizen of the United States, residing at Willow Grove, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Flying-Machines, of which the following is a specification.

My invention relates to improvements in flying machines, the object of the invention being to provide improved mounting for parallel propeller shafts, which enable the propellers to be positioned at various inclines to assist in elevating the ship.

A further object is to provide an improved construction of monoplane, with an improved construction of ailerons.

With these and other objects in view, the invention consists in certain novel features of construction, and combinations and arrangements of parts, as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings: Figure 1, is a broken view in side elevation illustrating my improvements. Fig. 2, is an enlarged fragmentary view in longitudinal section illustrating a detail construction. Fig. 3, is an enlarged view illustrating one of the shaft bearings. Fig. 4, is a fragmentary plan view in elevation with parts broken away to illustrate other features of construction below. Fig. 5, is a broken fragmentary view in transverse section on an enlarged scale on the line 5—5 of Fig. 4, and Fig. 6, is a view in section on the line 6—6 of Fig. 4.

My improvements are especially adapted for use in connection with a flying machine of the monoplane type, which is provided with a fore-and-aft frame 1, having a tail 2 thereon.

3, 3, are the laterally projecting wings at the forward end of the fore-and-aft frame, and 4 is a horizontal wing near the rear end of the frame.

Brackets 5 secured to the frame support wheels 6 adapted to run on the ground, and the machine may be provided with various accessories not necessary to describe.

7, 7, represent two parallel propeller shafts which are supported in bearing blocks 8, said blocks 8 are provided at their opposite sides with trunnions 9, pivotally mounted in brackets 10 depending from the upper portion of the frame. These shafts 7 are

normally in a horizontal position, such as shown in Fig. 1, and at their rear ends they are mounted to turn in blocks 11, which are connected by a transverse rod 12.

The outside of the blocks 11 are provided with pins 13, which move in longitudinal slots 14 in curved bars 15, secured rigidly in the frame, and said bars 15 are curved concentrically with the trunnions 9, so that the shafts may be tilted at various angles in accordance with the downward movement of rod 12. This downward movement of rod 12 is effected by means of a treadle, comprising a transverse rod 17 which is supported in pivoted links 14^a, and the latter pivotally mounted in brackets 16 secured to the frame. Rod 17 is connected by straps 15^a with rod 12, so that when this treadle mechanism is depressed by the operator who is seated on the chair 18, the shafts 7 will be located at an angle, so that the rotary movement of the propellers 19 will tend to elevate the forward end of the machine. These shafts 7 are driven in opposite directions by means of an engine 20, which drives a shaft 21. On shaft 21, two sprocket wheels 22 are secured, and one of these sprocket wheels is connected by a chain 23 with a sprocket wheel 24 on one shaft 7, while the other sprocket wheel 22 is connected by a twisted chain 25 with the sprocket wheel 26 on the other shaft 7, so that the propellers are driven in opposite directions.

It will be noted that the sprocket wheels 24 and 26 are located adjacent blocks 8, so that the tilting movement of the shafts do not interfere with the transmission. These shafts are normally held in a horizontal position by means of coiled springs 27, which will return the shafts to such position when permitted. Below the outer ends of the wings 3, ailerons 28 are mounted, and the front and rear ends of these ailerons are connected by wires 29 and 30 respectively. The front wire is passed around pulleys 31, and is adapted to be connected to the back of the aviator, and I have shown as a simple form of connection, a pin 32 which is intended to be caught in the garment of the aviator. Hence, when the machine tilts, the aviator naturally holds his body in an upright position, and this will cause the ailerons to move and compel the machine to right itself.

In operation, the aviator by pressing the rod 17 with his foot, may incline shafts 7,

so that the propellers will tend to lift the machine, and this lifting action may be regulated in accordance with the depression of the rear ends of said shafts 7, and by movement of the aviator's body, he can insure an equilibrium of the machine in flight.

Various slight changes might be made in the general form and arrangement of parts described without departing from my invention, and hence I do not limit myself to the precise details set forth, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a flying machine, the combination with a fore-and-aft frame, and side wings supported on the frame, of pivoted blocks, propeller shafts having rotary mounting in the pivoted blocks, propellers on the forward ends of said shafts, means for transmitting rotary motion to said shafts, bearing blocks to receive the rear ends of said shafts, a rod connecting said bearing blocks, curved guides for said blocks, and means for moving said rod vertically, substantially as described.

2. In a flying machine, the combination with a fore-and-aft frame, and side wings supported on the frame, of pivoted blocks, propeller shafts having rotary mounting in the pivoted blocks, propellers on the forward ends of said shafts, means for transmitting rotary motion to said shafts, bearing blocks to receive the rear ends of said shafts, a rod connecting said bearing blocks, means for moving said rod vertically, curved bars having slots therein, and lugs on said last-mentioned bearing blocks mounted in curved slots in said bars, substantially as described.

3. In a flying machine, the combination with a fore-and-aft frame, and side wings supported on the frame, of pivoted blocks, propeller shafts having rotary mounting in the pivoted blocks, propellers on the forward ends of said shafts, means for transmitting rotary motion to said shafts, bearing blocks to receive the rear ends of said shafts, a rod connecting said bearing blocks, curved guides for said blocks, means for moving said rod vertically, a foot treadle, flexible devices connecting said foot treadle with said last-mentioned rod, and springs normally holding said last-mentioned rod elevated, substantially as described.

4. In a flying machine, the combination with a fore-and-aft frame, and side wings supported on the frame, of pivoted blocks, propeller shafts having rotary mounting in the pivoted blocks, propellers on the forward ends of said shafts, means for transmitting rotary motion to said shafts, bearing blocks to receive the rear ends of said shafts, a rod

connecting said bearing blocks, means for moving said rod vertically, curved bars having slots therein, and lugs on said last-mentioned bearing blocks mounted in curved slots in said bars, a foot treadle, flexible devices connecting said foot treadle with said last-mentioned rod, and springs normally holding said last-mentioned rod elevated, substantially as described.

5. In a flying machine, the combination with a fore-and-aft frame, and side wings supported on the frame, of pivoted blocks, propeller shafts having rotary mounting in the pivoted blocks, propellers on the forward ends of said shafts, sprocket wheels on said shafts adjacent their pivotal point, an engine, an engine shaft, sprocket wheels on said engine shaft, sprocket chains connecting said last-mentioned sprocket wheels with the sprocket wheels on the propeller shafts, and one of said sprocket chains twisted, bearing blocks to receive the rear ends of said shafts, a rod connecting said bearing blocks, curved guides for said blocks, and means for moving said rod vertically, substantially as described.

6. In a flying machine, the combination with a fore-and-aft frame, and side wings supported on the frame, of pivoted blocks, propeller shafts having rotary mounting in the pivoted blocks, propellers on the forward ends of said shafts, sprocket wheels on said shafts adjacent their pivotal point, an engine, an engine shaft, sprocket wheels on said engine shaft, sprocket chains connecting said last-mentioned sprocket wheels with the sprocket wheels on the propeller shafts, and one of said sprocket chains twisted, bearing blocks to receive the rear ends of said shafts, a rod connecting said bearing blocks, means for moving said rod vertically, curved bars having slots therein, and lugs on said last-mentioned bearing blocks mounted in curved slots in said bars, substantially as described.

7. In a flying machine, the combination with a fore-and-aft frame, and side wings supported on the frame, of pivoted blocks, propellers on the forward ends of said shafts, sprocket wheels on said shafts adjacent their pivotal point, an engine, an engine shaft, sprocket wheels on said engine shaft, sprocket chains connecting said last-mentioned sprocket wheels with the sprocket wheels on the propeller shafts, and one of said sprocket chains twisted, bearing blocks to receive the rear ends of said shafts, a rod connecting said bearing blocks, curved guides for said blocks, means for moving said rod vertically, a foot treadle, flexible devices connecting said foot treadle with said last-mentioned rod, and springs normally holding said last-mentioned rod elevated, substantially as described.

8. In a flying machine, the combination

with a fore-and-aft frame, and side wings supported on the frame, of pivoted blocks, propeller shafts having rotary mounting in the pivoted blocks, propellers on the forward
5 ends of said shafts, sprocket wheels on said shafts adjacent their pivotal point, an engine, an engine shaft, sprocket wheels on said engine shaft, sprocket chains connecting said last-mentioned sprocket wheels with
10 the sprocket wheels on the propeller shafts, and one of said sprocket chains twisted, bearing blocks to receive the rear ends of said shafts, a rod connecting said bearing blocks, means for moving said rod vertically,

curved bars having slots therein, and lugs on 15 said last-mentioned bearing blocks mounted in curved slots in said bars, a foot treadle, flexible devices connecting said foot treadle with said last-mentioned rod, and springs normally holding said last-mentioned rod 20 elevated, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM D. BURK.

Witnesses:

M. R. POTTS,
CHAS. E. POTTS.