

A. H. FRIEDEL.
FLYING MACHINE.
APPLICATION FILED OCT. 23, 1905.

900,844.

Patented Oct. 13, 1908.

Fig. 1.

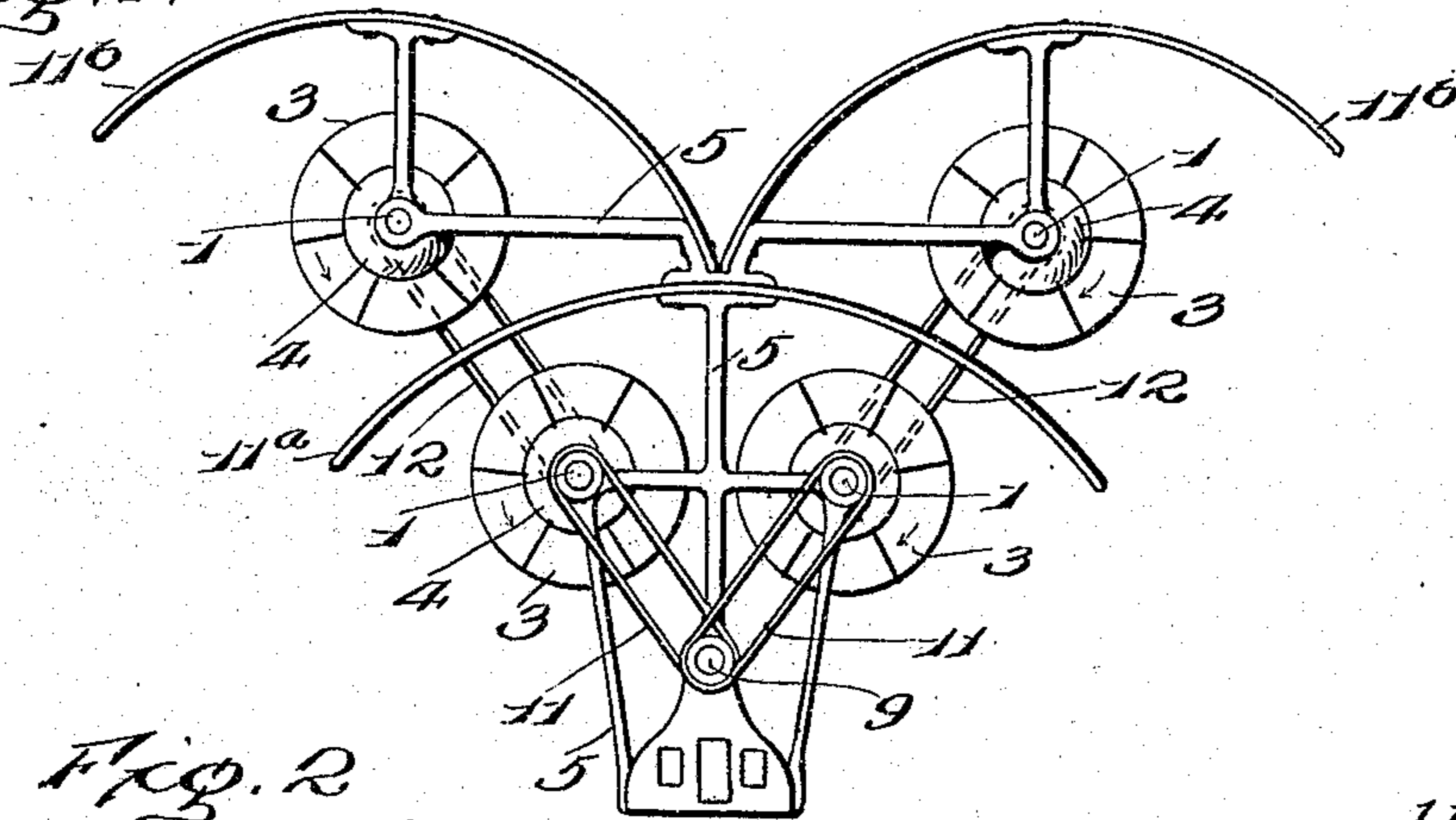


Fig. 2.

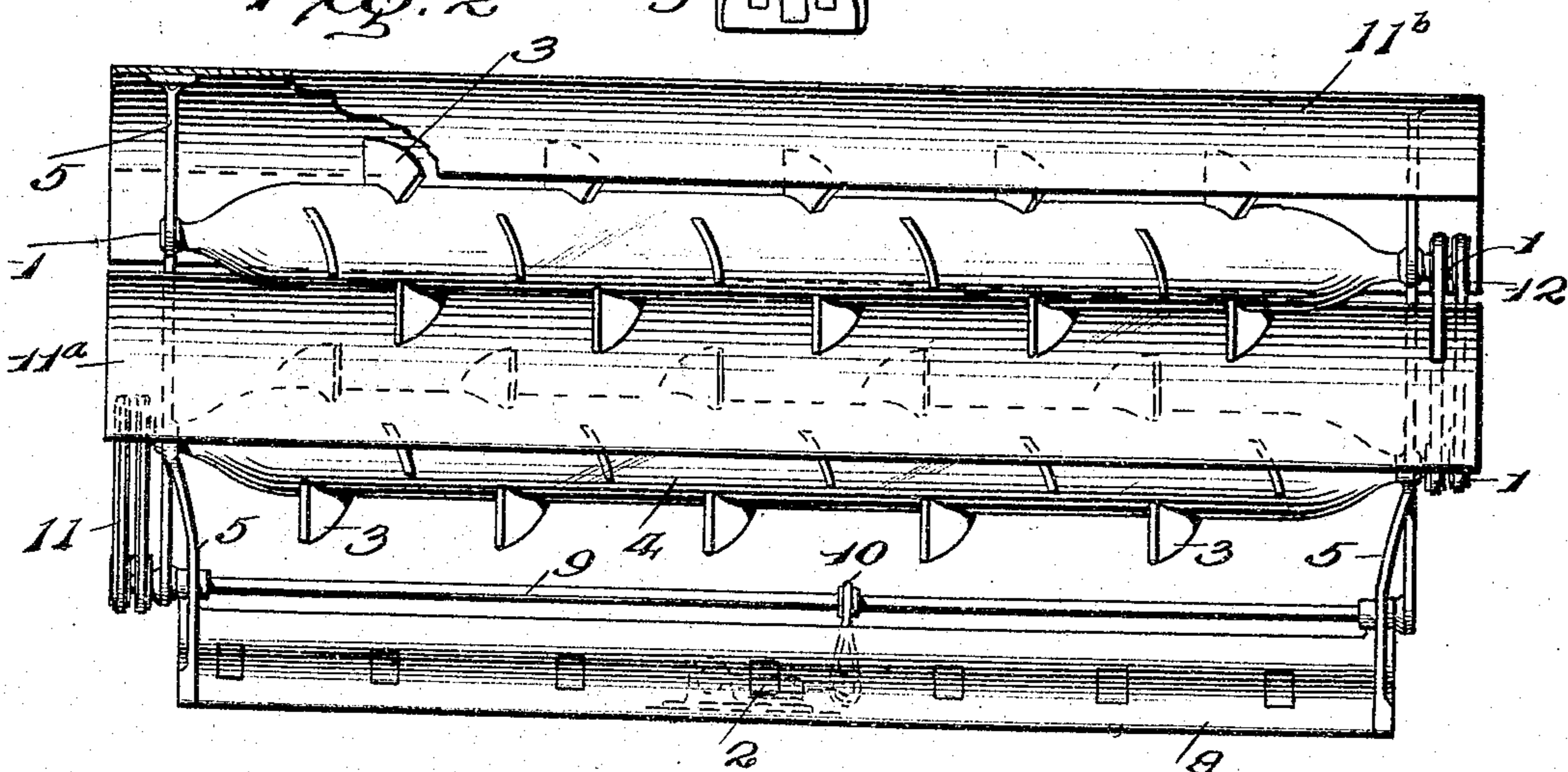
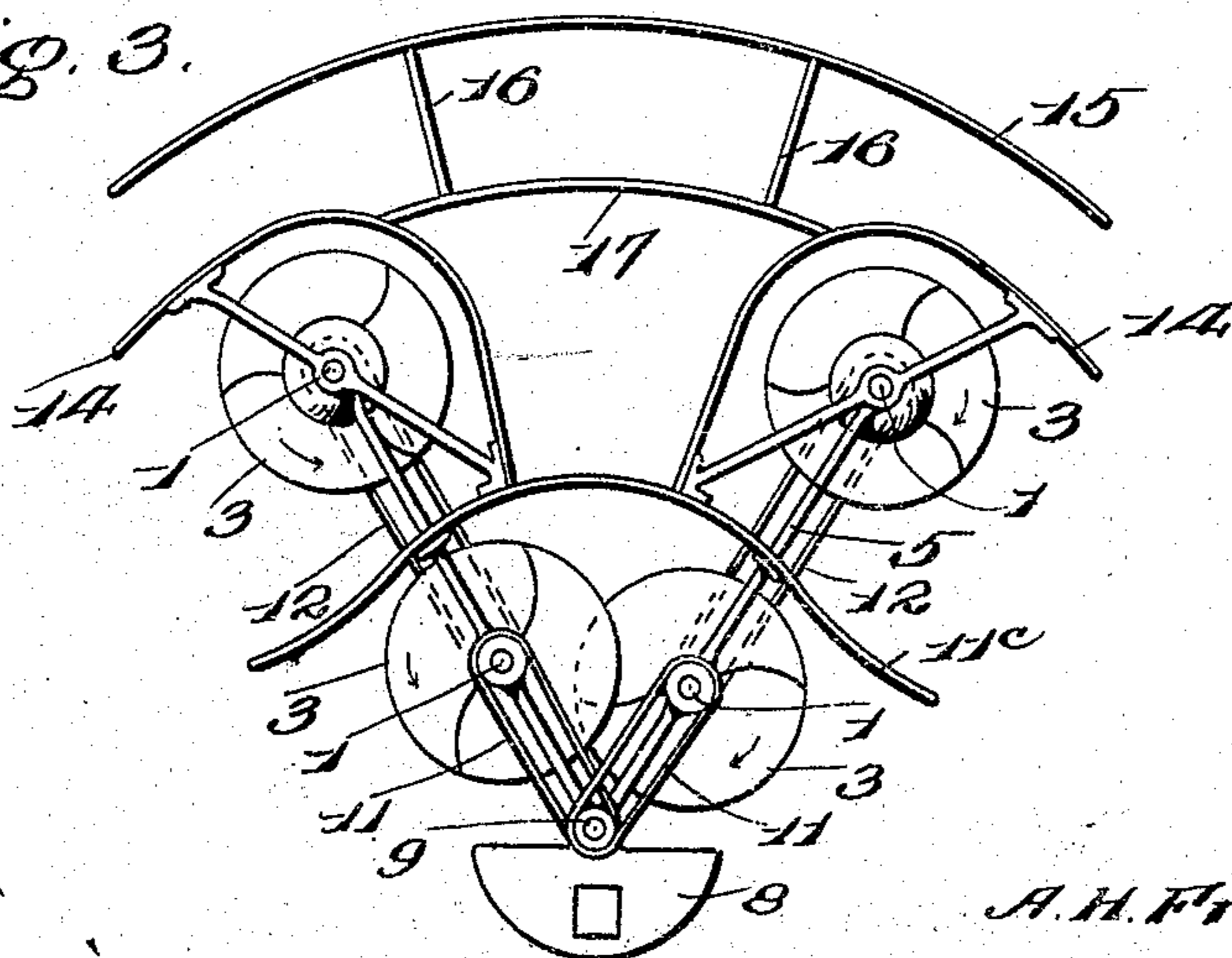


Fig. 3.



Inventor

A. H. Friedel

Witnesses

J. M. M. M.

W. H. Woodson

By

Phar Racy, Attorneys

UNITED STATES PATENT OFFICE.

ALBERT HUGO FRIEDEL, OF CLEVELAND, OHIO.

FLYING-MACHINE.

No. 900,844.

Specification of Letters Patent.

Patented Oct. 13, 1908.

Application filed October 23, 1905. Serial No. 284,038.

To all whom it may concern:

Be it known that I, ALBERT H. FRIEDEL, citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Flying-Machines, of which the following is a specification.

This invention relates to aerial navigation and consists of the novel features, details of construction and combinations of parts which hereinafter will be more particularly set forth, illustrated and claimed.

In the drawings hereto attached and forming a part of the specifications: Figure 1 is an end view of a machine embodying the invention. Fig. 2 is a side view of the machine, an end portion of the upper aeroplane being broken away. Fig. 3 is an end view of a modification.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to the drawings and specifically describing the invention, the numeral 1 designates the propelling shafts, and said shafts are supported in a suitable framework 5 and are operated by any preferred means, such as a motor 2 connected therewith. Any suitable number of the propelling shafts 1 may be utilized, such number depending, of course, upon the size of the machine and other considerations. Extended from the shafts 1 are a plurality of fans or wings 3 constituting elements of the propeller by which the machine is caused to travel through the air. The fans 3 may be of any suitable material within the contemplation of the invention, and are either attached directly to the shafts 1 or to a gas bag 4 carried by each of said shafts. The bags 4 may be of any desired construction and promote the buoyancy of the machine, at the same time constituting means for keeping the apparatus afloat, should it alight upon a body of water. The gas bags 4, however, may be dispensed with in view of the fact that the propellers are sufficient to buoy the machine upon the air.

In the construction shown in Figs. 1 and 2, four propellers 3 are provided, two being arranged above the remaining two and spaced apart transversely a greater distance. A kite or aeroplane 11^a is arranged above the lower two propellers and below the upper two. A kite 11^b is arranged above each of

the upper two propellers and curves from the center outward with the result that each of the upper two propellers is arranged between a pair of aeroplanes so as to insure the stability of the machine. The framework is adapted so as to support the operating parts and is suitably braced by stay rods extending both vertically, horizontally and obliquely. The motor 2 is located at a common point and sprocket chains or other power transmitting means transmit motion therefrom to the several propellers.

In the modification shown in Fig. 3, the two lower propellers are arranged so that their wings or blades overlap, thereby reducing the width of the machine without materially detracting from its propelling power. An aeroplane 11^c is arranged over said propellers, its middle portion curving upward and its edge portions curving outward. Each of the upper propellers is protected upon its inner and upper side by means of an aeroplane 14, the two aeroplanes 14 being arranged to face outward. An aeroplane 15 is arranged above the aeroplanes 14 and spans the space formed between them and is connected with said aeroplanes by means of rods 16 and 17. The part 17 forms a brace for the aeroplanes 14 and the rods 16 support the aeroplane 15.

The car 8 may be of any construction and is suspended below the propellers and aeroplanes, the several parts being connected by means of a suitable framework 5. A shaft 9 is journaled in bearings at the ends of the car and is driven by means of a motor 2, a belt 10 transmitting motion from said motor to the shaft 9. Drive belts 11 connect pulleys fast to the shaft 9 with corresponding pulleys fast to the ends of the shafts or journals 1 of the lower propellers. Other drive belts 12 connect pulleys at the ends of shafts of the lower propellers with pulleys fast to the ends of the shafts or journals of the upper propellers. It is to be understood that the car may be of any construction and the framework of any design and that any means may be employed for driving the propellers from a suitable motor arranged in the car.

Having thus described the invention, what is claimed as new is:

1. In a flying machine, the combination of transversely spaced propellers, an aeroplane arranged above the propellers and transversely curved, a motor located below the propellers and arranged medially of parallel

- planes passed vertically through the axis of said propellers and independent connecting means between the motor and the propellers, other propellers located above the said aeroplane and spaced apart a greater distance than the first mentioned propellers and connected therewith and with the motor for simultaneous operation, and an aeroplane arranged above the last mentioned propellers.
10. 2. In a flying machine, the combination of upper and lower transversely spaced propellers, an aeroplane separating the upper and lower propellers and extending beyond the sides of the latter and transversely curved, upper aeroplanes, one for each upper propeller and transversely curved and having their inner lower edges in connection with the lower aeroplane, a motor located below the propellers upon a median line and independent connecting means between said motor and the propellers on opposite sides of said median line.
- In testimony whereof I affix my signature in presence of two witnesses.
- ALBERT HUGO FRIEDEL. [L. s.]
- Witnesses:
VICTOR C. LYNCH,
N. L. McDONNELL.