

No. 868,039.

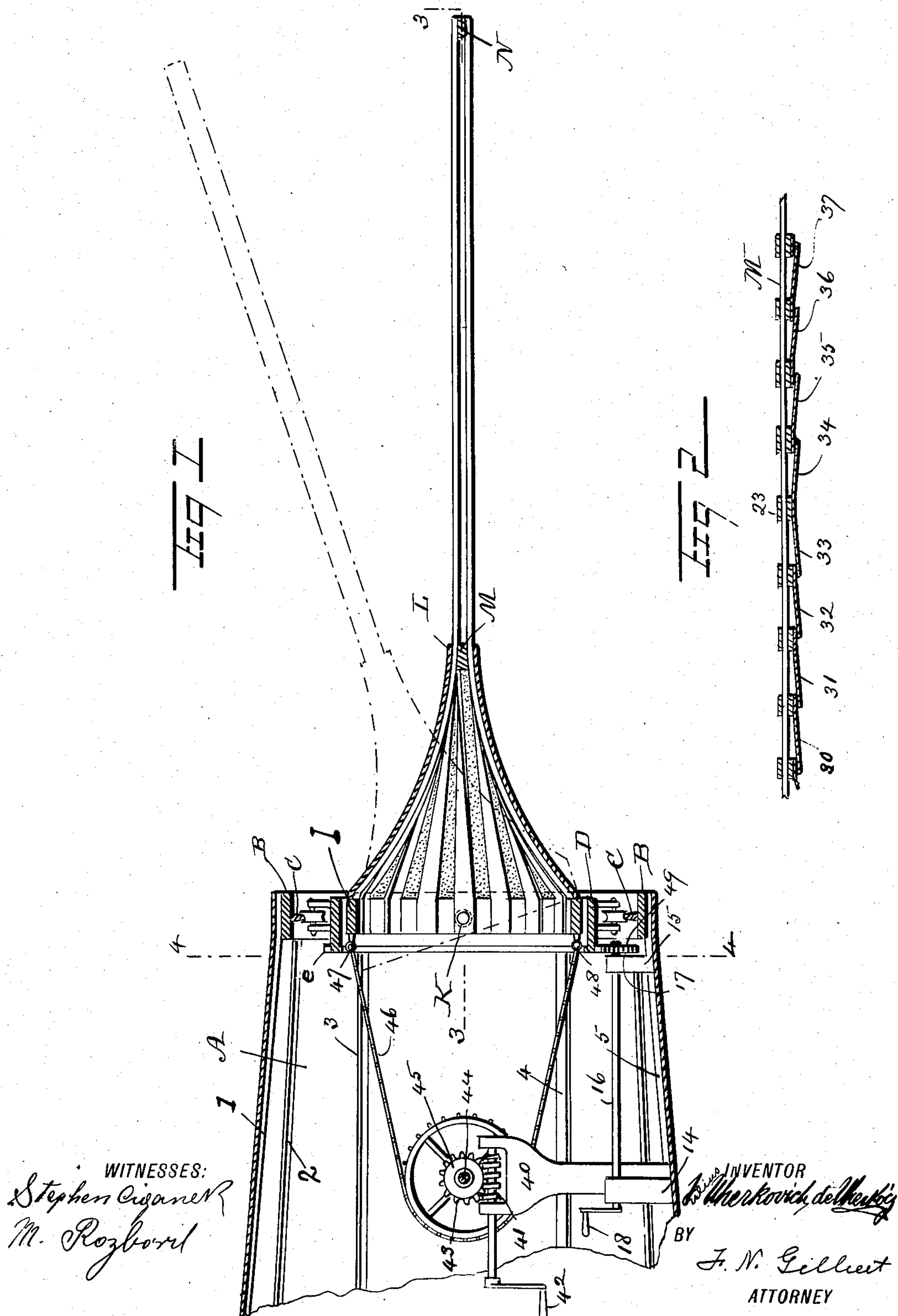
PATENTED OCT. 15, 1907.

J. U. DE UHERKOĆZ.

STEERING GEAR FOR WINGED FLYING MACHINES OR AIR SHIPS.

APPLIOATION FILED APR. 3, 1907.

2 SHEETS—SHEET 1



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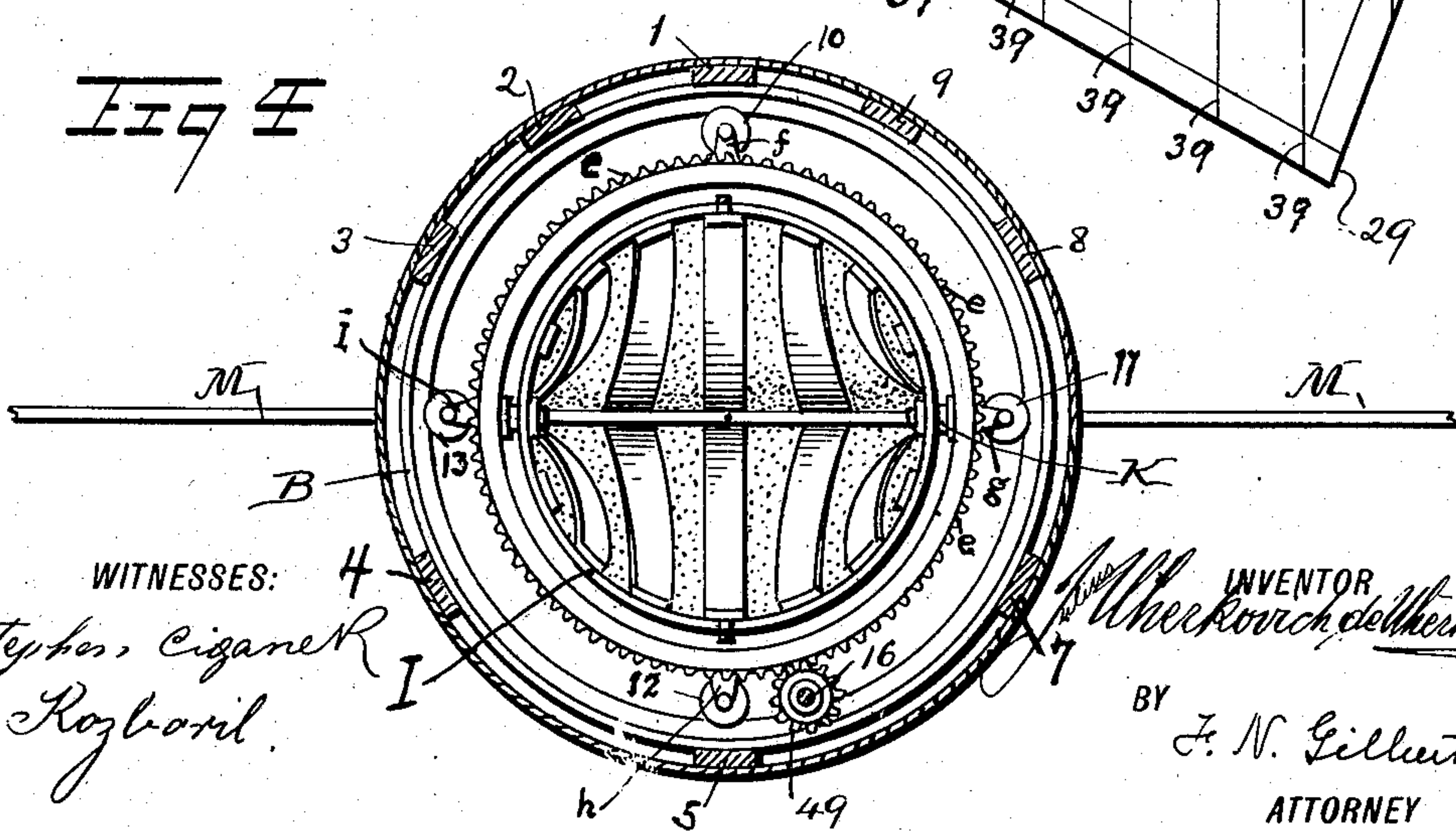
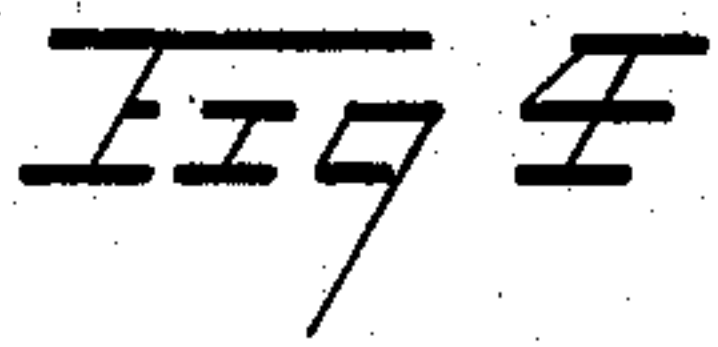
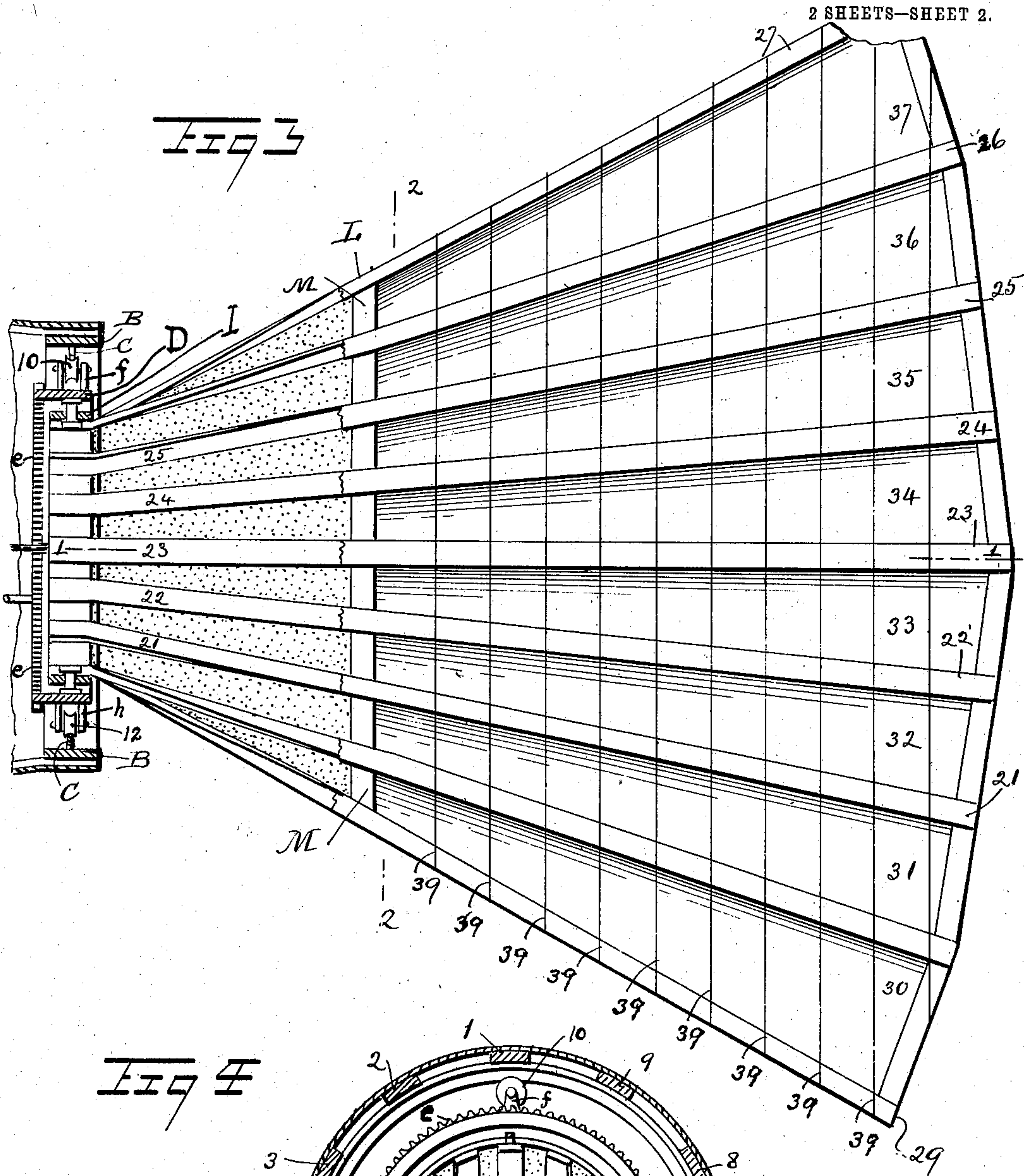
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

JULIUS UHERKOVICH DE UHERKÓCZ, OF BINGHAMTON, NEW YORK.

STEERING-GEAR FOR WINGED FLYING-MACHINES OR AIR-SHIPS.

No. 868,039.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed April 3, 1907. Serial No. 366,104.

To all whom it may concern:

Be it known that I, JULIUS UHERKOVICH DE UHERKÓCZ, residing at Binghamton, in the county of Broome and State of New York, a subject of Hungary, have
5 invented certain new and useful Improvement in Steering-Gear for Winged Flying-Machines or Air-Ships, of which the following is a specification.

My invention relates more particularly to an adjustable steering gear for guiding a flying machine or air-
10 ship when in flight in the air or sustained in the air, and is especially adapted to what are commonly known as winged flying machines sustained by pairs of flapping or moving wings.

My invention is described as attached to a novel
15 ribbed body frame to which are attached two wings having hinged connection with the body and which are vibrated up and down by means of revolving disks, wrist-pins and operated slotted levers connected with the wings. See application Serial No. 366,103 filed
20 April 3, 1907. To the rigid framed body in the rear and attached thereto by circular and hinged connections is my novel steering gear, an extended fan-shaped projection which aids in sustaining the equilibrium of the body in the air.

25 My invention consists of a frame with a circular and pivoted connection with the body and to which frame are attached ribs forming a light but rigid support for the covering of the frame. Also there are attached to the ribs a system of flexible blades which combined
30 invention aids in assisting the equilibrium of the body when in the air and forms a guiding fan or steering gear for guiding the flight or position of the body. It is operated by a combination of axes operating in concentric circles one within the other and thus enabling
35 my fan-shaped steering gear to take positions vertically or to be gradually changed from one degree of curve to another; to be raised up or down; to be revolved and the fan-blades placed at different angles and thus by these changed positions to enable the body
40 in flight to move up or down; to the right or to the left or in a circular movement of any degree or curve and thus to guide the course of the body. The guiding movement of the steering gear may be exerted by means of an adjustable shaft connected with the pro-
45 pelling power within the body, or any other form of motive power.

I elect to use in the operation of this flying machine and my steering gear, any form of motive power or mechanical device for furnishing such power as is best
50 suited for the purpose aimed at.

With this and other objects in view the invention comprises certain novel constructions, combinations and arrangements of parts as is hereinafter particularly described.

60 Figure 1 is the longitudinal section of a flying ma-

chine showing my steering mechanism applied and taken on line 1. 1. of Fig. 3. Fig. 2 is a detailed cross-section taken on line 2. 2. of Fig. 3. Fig. 3 is a sectional plan-view taken on line 3. 3. of Fig. 1. Fig. 4
is a cross-section taken on line 4. 4. of Fig. 1.

My invention consists of a framed structure as shown in Figs. 1, 3 and 4.

My invention is attached to the rear of the body portion A. of a flying machine as shown in Figs. 1, 2 and 3. In the portion A. I have the frame work consisting of framed ribs 1, 2, 3, 4 and 5 as shown in Figs. 1 and 4 and ribs 7, 8 and 9 as shown in Fig. 4. The rear of the body portion is preferably constructed in circular form, but I elect to attach and operate my invention in connection with any form of body of a flying
65 machine. Within are the stay-ribs 1, 2 and 3 etc., of the body portion and attached to them is a band or circular rib B., and which supports the stay-ribs as is shown in Figs. 1, 3 and 4. For the more perfect movement of my steering gear I elect to construct in the interior of the band B., a track or rail C., by which and following which the guiding fan is turned laterally. My steering gear is constructed for the purpose of being
75 operated in two distinct planes, horizontal and vertical as shown in Figs. 1 and 4. To accomplish this I construct the circular frame or ring D., and mounted on the outer surface of this circular frame are a series of cogs, e, e, e, etc., as shown in Figs. 1, 3 and 4. To this rim D., are also attached projecting roller supports, f, g, h, i, etc., as shown in Figs. 1, 3 and 4. On these roller supports are mounted the curved rollers 10, 11, 12 and 13
80 which, when the circular frame is in place, run on the rail or track C.

To further operate my invention, within the body portion I mount the supports 14 and 15 which support
90 the crank-shaft 16. At the end of the crank-shaft 16 I mount the cog-wheel 17. The crank-shaft 16 is turned by the handle 18 as shown in Fig. 1. The cog-wheel 17 is geared with a series of cogs, E., on the circular band or rib D. Thus by the turning of the cog-wheel 17, the rim D., is turned. Within the rim D., I mount a circular frame I which is pivotally mounted on the axis K., as shown in Fig. 4. Attached to this pivotally mounted ring or band J., and extending toward the rear are fastened the series of slats 21 to 26
95 etc., as shown in Figs. 3 and 4. These slats following the contour of the band to which they are fastened, extend in a curved line as shown in Figs. 3 and 4 but all converge into a flat surface or a horizontal line at the point L, as shown in Figs. 1 and 3. They at the same
100 time diverge while approaching this horizontal line and surface, as shown in Fig. 3.

At the point L, between the slats of the upper half of the circular band J., and those of the lower half of the circle J., I insert the cross-slat M. These converg-
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ing slats, 22 to 25 etc., are thus securely fastened to this cross-slat M. as shown in Figs. 1, 3 and 4 and thus form the upper half of the circle J., and the slats forming the lower half of the circle J., henceforth extend in a nearly parallel line to each other, those in the upper half of the circle being fastened to the upper side of the cross-slat M., and those on the lower half of the band J., being attached to the lower side of the slat M. These slats extend outward to line 3 in Fig. 1, where they are supported by the cross-slat N. Thus I form and construct a fan shaped frame as shown in Fig. 3. From the cross-piece M., and to the respective ends of the extending slat mentioned and along the same and attached to them are extended blades, 30 to 37 as shown in Figs. 2 and 3. These blades are fastened on one side to the extended slats and on the other the blade edge is left unattached. To add to its strength but not to its weight, I stretch across the slats of the frame work, fine cords or wires, 39 as shown in Fig. 3. That portion of the steering gear between the point where the slats are fastened to the band or rim J., to the point where there is mounted the cross-slat M., I cover with canvas, cloth or any other suitable or flexible material. For the ready manipulation of the steering gear in a vertical direction, I mount within the body portion a shaft supporter, 40, as shown in Fig. 1. On these I mount the worm 41, turned by the crank 42. On this worm 41 is geared the worm wheel 43, revolving on the shaft 44, as shown in Fig. 1. On this same shaft is mounted the sprocket-wheel 45. To the sprocket wheel 45 is attached the sprocket chain 46 which in turn is attached by hinged connections to the circular band J., at the points 47 and 48, so that in the operation of the lowering or raising the steering gear, I turn the sprocket wheel which by means of the connecting sprocket chains turns upon the axis K. To revolve the steering gear vertically I turn the crank-shaft 16 which turns the cog-wheel 49, which is geared to the cogs E., on the rim J., and thus it revolves the steering gear in a vertical plane either way. Thus by two gearings I can

either raise or lower, the steering gear or turn it vertically or horizontally.

In order to permit simultaneous rotary movement of the fan-tail rudder as well as up and down tilting motion, the sprocket chain between the sprocket wheel 45, and the pivotal ring support for the base of the rudder, may be loose, or this chain may be made flexible in certain portions. Also the supporting shaft 44, for the sprocket wheel may be arranged to tilt with the movements of the rudder, or the sprocket wheel may be mounted to oscillate on the supporting shaft.

Having thus fully described my invention what I claim as new and for which I desire Letters Patent is as follows:—

1. A steering gear for air ships comprising a supporting ring rotatably supported on the ship, a rudder carried by said ring, means for rotating the ring and means for tilting the rudder.

2. A steering gear comprising a supporting ring mounted to rotate, a tilting ring in said rotatable ring, and a rudder carried by said tilting ring.

3. A steering gear for air ships comprising a supporting ring mounted to rotate, a tilting ring in said rotatable ring, a rudder carried by the tilting ring, means for tilting the rudder, and means for rotating the supporting ring.

4. A rudder comprising an outer supporting ring mounted to rotate, an inner ring pivotally mounted in the outer supporting ring, means for tilting the inner ring and means for rotating the outer ring, slats secured to the inner ring and extending in divergent lines in the shape of a fan tail, and a covering to the slats.

5. A rudder comprising a ring, slats having their ends secured to said ring, the slats arranged in diverging relation but converging to a common plane, strengthening strips secured across the slats, brace wires connected between the slats, a covering to the ring or base portion of the rudder, and blades each having their one edge secured to one of the slats and overlapping the next adjacent slat.

In testimony whereof I have affixed my signature, in presence of two witnesses.

JULIUS UHERKOVICH DE UHERKÓCZ.

Witnesses:

MATT ROZBORIL,
STEPHEN CIZANEK.