C. F. RITCHEL.
Flying-Machine.

No. 201,200. Patented March 12, 1878.

Fig. 1.

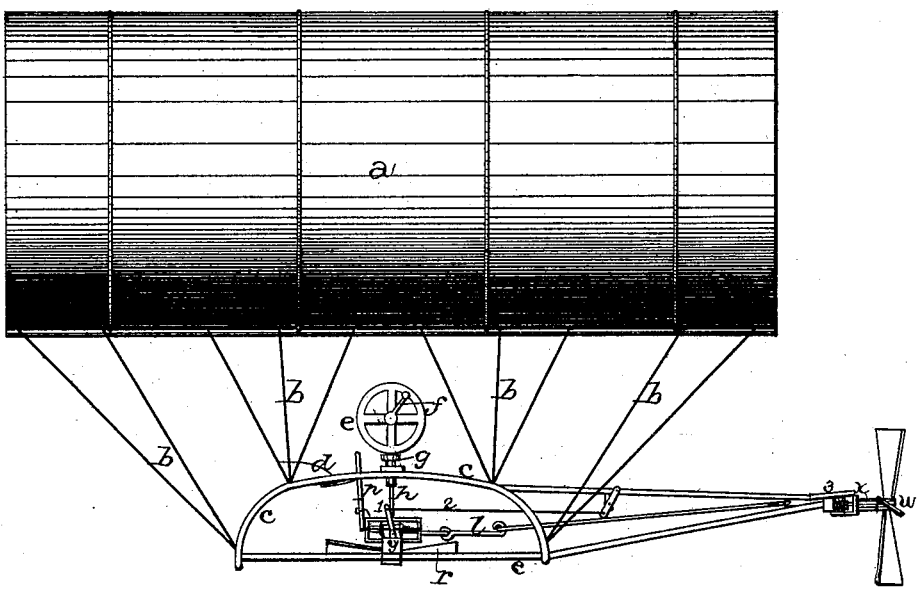


Fig. 2.

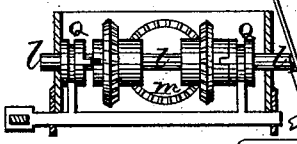


Fig. 3.

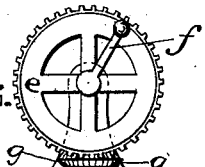


Fig. 4.

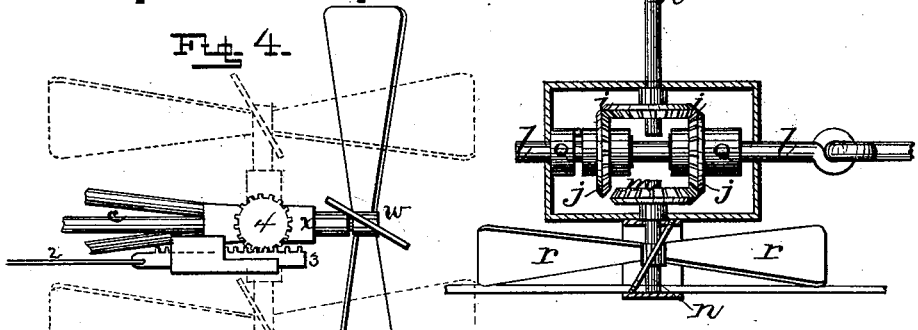
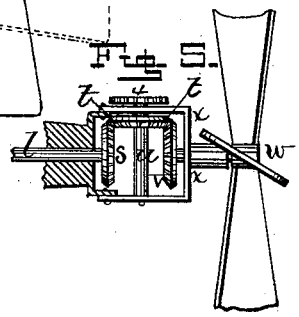


Fig. 5.



WITNESSES.

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UNITED STATES PATENT OFFICE.

CHARLES F. RITCHEL, OF CORRY, PENNSYLVANIA, ASSIGNOR TO G. H. HESS, OF WINCHESTER, VIRGINIA.

IMPROVEMENT IN FLYING-MACHINES.

Specification forming part of Letters Patent No. **201,200**, dated March 12, 1878; application filed March 2, 1878.

To all whom it may concern:

Be it known that I, CHARLES F. RITCHEL, of Corry, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Flying-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in flying-machines; and it consists in, first, pivoting or journaling a propeller-wheel upon the front end of the machine, whereby the machine can be made to move either backward or forward, or turn to the right or left, thus enabling the operator to move the machine in any direction at will; second, in the combination of a balloon, an operating mechanism, a propeller-wheel to raise the machine, and a propeller-wheel that is pivoted upon the front end of the machine, so that it can be turned in any direction, and which moves the machine in any desired direction, all of which will be more fully described hereinafter.

Figure 1 is a side elevation of my invention. Fig. 2 is a plan view, and Fig. 3 a side elevation, of the devices for operating the lifting-wheel. Figs. 4 and 5 are detail views of the devices for operating the guiding and propelling wheel upon the front end of the machine.

a represents a balloon of any desired shape, size, or construction, but which should have a lifting capacity sufficient to almost lift the machine, together with at least one person in it, thus leaving very little for the lifting-wheel to do. By thus giving the balloon such a lifting-power, all the more force may be applied to driving the machine back and forth and from side to side, and the descent will be the more easy and gradual.

Secured to the under side of this balloon by means of suitable light strong rods and braces *b* is a frame, *c*, of any desired construction or material, for the support of the operator and the driving machinery. Supported upon two of the cross-bars of this frame *c* is the seat *d*, upon which the operator sits, and this seat is so located in respect to the machinery as to enable him to apply his whole strength to the propulsion and management of the machine.

To the main driving-wheel *e* is secured a crank, *f*, and by means of which the machinery is operated. This beveled wheel *e* meshes with the beveled pinion *g*, which is secured to the top of the vertical shaft *h*. To the lower end of this shaft is secured a beveled wheel, *i*, which is always in gear with the two beveled wheels *j* on the horizontal shaft *l*. These two wheels *j* are placed loosely on this shaft, and gear at their lower edges with the beveled wheel *m* on top of the shaft *n*, to which the lifting propeller-wheel is secured.

Feathered upon the shaft *l* on the outer side of each wheel *j* is a clutch, Q, which clutches may be thrown in gear alternately with either wheel by means of the hand-lever *p*, which extends up within easy reach of the operator. By throwing one clutch in gear, the wheel *r* will be made to revolve in one direction and lift the machine upward, and by throwing in the other clutch the shaft *l* will revolve in the opposite direction, and cause the machine to move backward.

The shaft *l* may be made in one continuous piece, or may be jointed, as here shown, and have its forward end project through the front of the frame *c*, to receive the beveled wheel *s*. This wheel *s* meshes with a similar wheel, *t*, placed on the vertical shaft *u*, journaled in suitable bearings, and this wheel *t* communicates motion to the wheel *v* secured to the inner end of the shaft, to which the guiding and propelling wheel *w* is secured. The bearings *x* of the wheel *w* are secured to the shaft *u*, and hence the wheel *w* can be moved around, back and forth, as shown in dotted lines in Fig. 4. Upon the top of the cross-piece *y* is a treadle, 1, to which is connected a rod, 2, the front of which rod has a rack, 3, formed upon it, for the purpose of engaging with the wheel 4 secured to the top of the vertical shaft *u*, to which the bearings *x* of the wheels *w* are secured. The operator, by pressing with his foot upon the treadle, can turn the propelling-wheel *w* to the front, or around to either side, as shown, or to any intermediate points between.

The operator, having started the wheel *e*, throws one of the clutches Q in gear, and the propeller-wheel *r* causes the machine to rise upward at the same time that the wheel *w* causes the machine to move forward. By means of the treadle the operator causes the wheel *w* to turn in any direction, and thereby makes the machine move straight ahead, to either side, back, or turn completely around, as upon a pivot. By reversing the wheel *r* the machine will descend at any desired rate of speed, and the front wheel *w* will stand still, if desired.

Although the wheel *w* is here shown as having only a horizontal movement, I may in some instances use a universal joint, and thus use the wheel *w* for assisting the machine to rise vertically upward, and to descend, as well as to move the machine backward or forward or around in a circle.

Having thus described my invention, I claim—

1. The combination of the wheel *w*, jointed upon one end of the frame *c*, with the wheel 4, rack 3, and a connecting-rod, 2, whereby the wheel *w* may be turned in any desired direction, substantially as described.

2. In a flying-machine, the combination of a balloon, *a*, an operating mechanism, substantially as described, a propeller-wheel, *r*, for raising and lowering the machine, and a jointed wheel, *w*, upon one end of the machine, for both steering it and moving it back and forth, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 2d day of March, 1878.

CHAS. F. RITCHEL.

Witnesses:
ROBT. M. BARR,
WILL. H. KERN.