

(No Model.)

W. C. VANDEGRIFT.  
KITE.

No. 497,393.

Patented May 16, 1893.

FIG. 1-

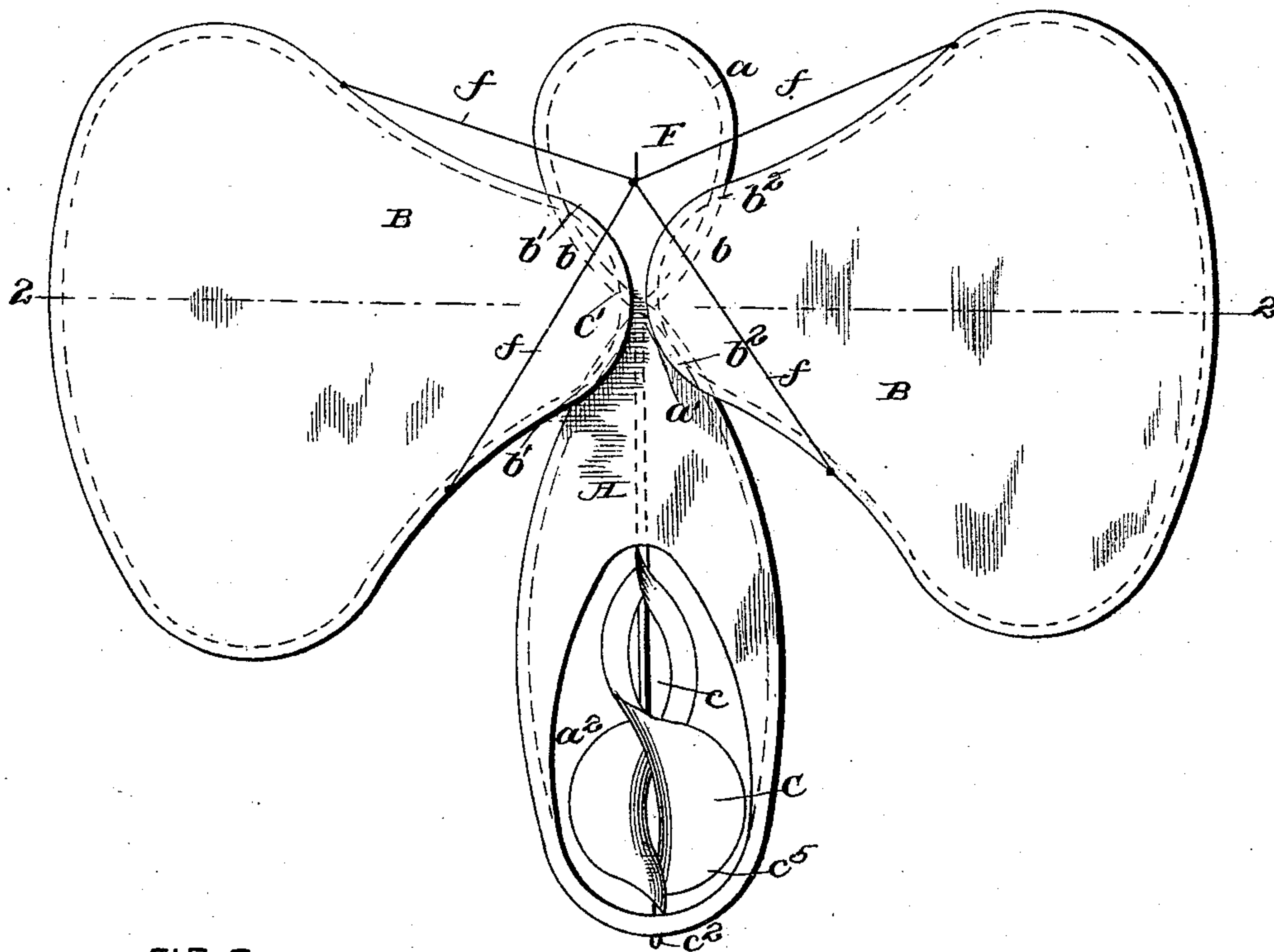


FIG. 3.

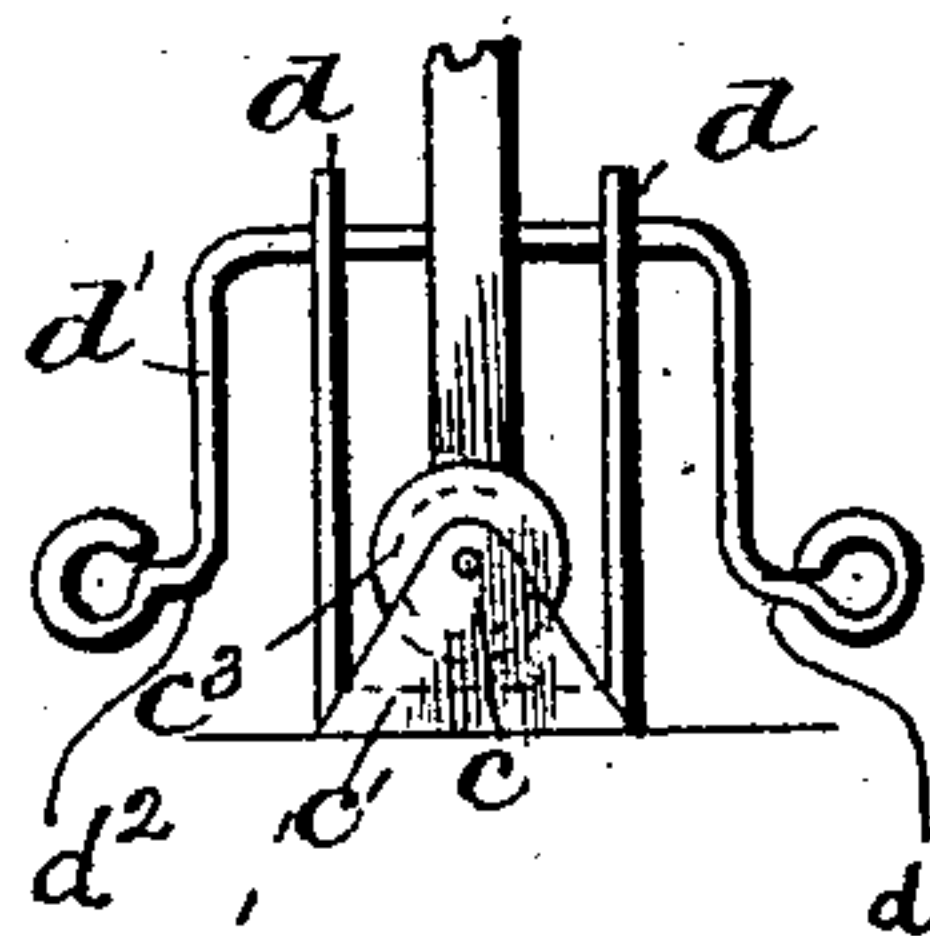
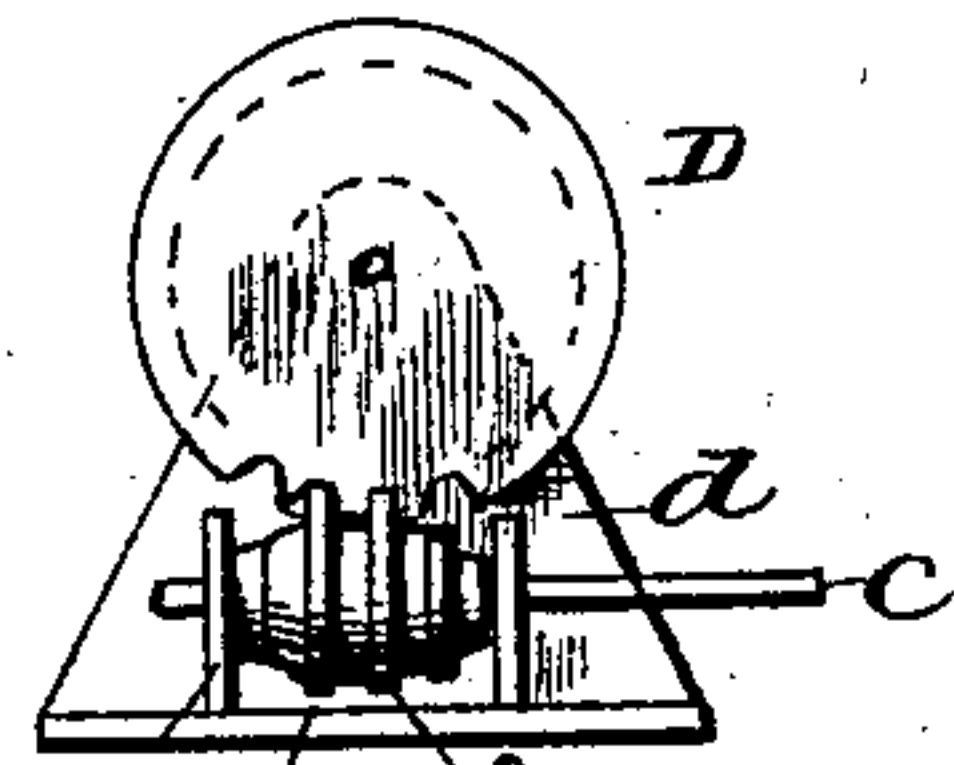
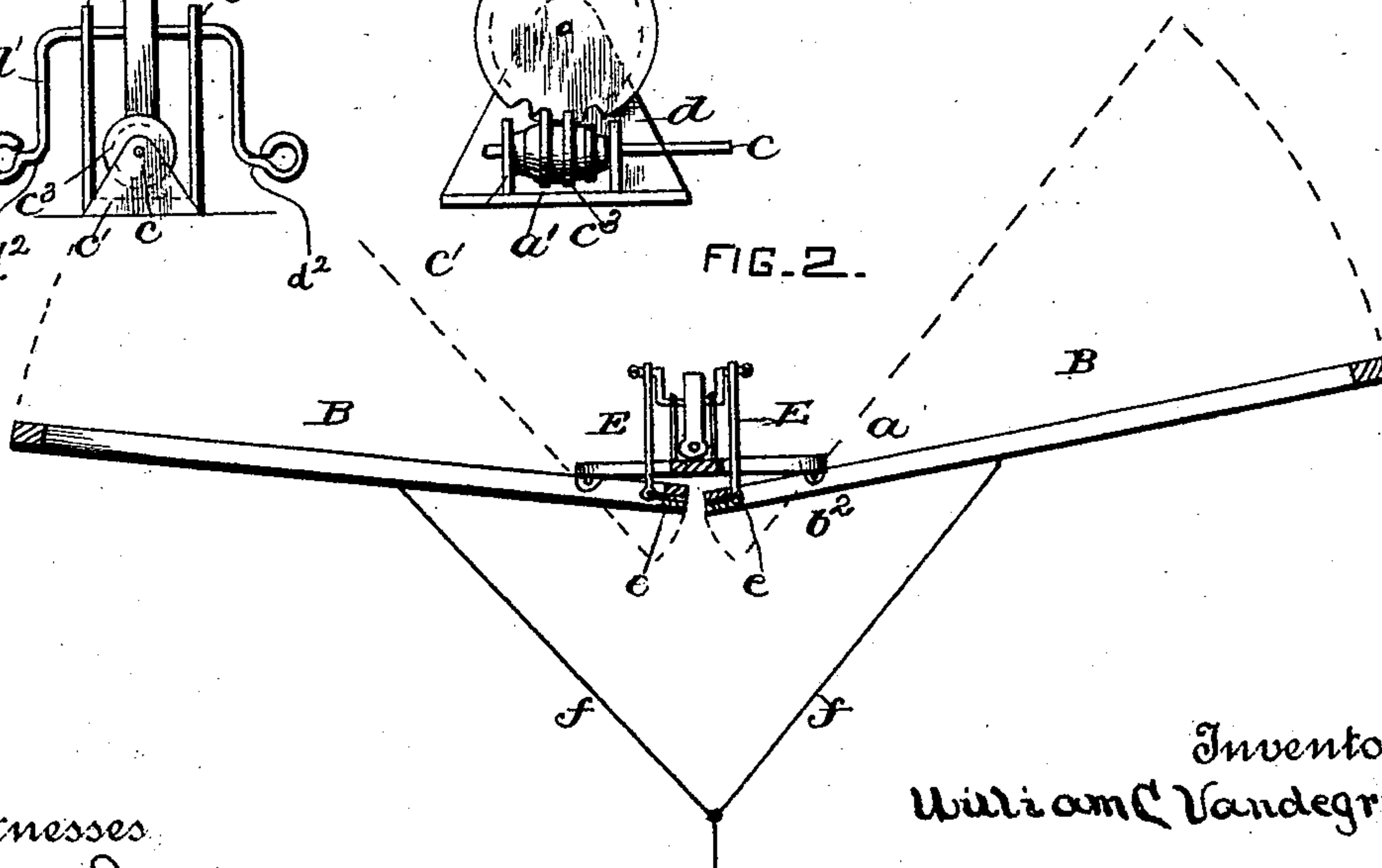
FIG. 4. *cs*

FIG. 2.



## Witnesses

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# UNITED STATES PATENT OFFICE.

WILLIAM C. VANDEGRIFT, OF TOLEDO, OHIO.

## KITE.

SPECIFICATION forming part of Letters Patent No. 497,393, dated May 16, 1893.

Application filed August 29, 1892. Serial No. 444,459. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM C. VANDEGRIFT, of Toledo, Ohio, have made a new and useful Improvement in Kites, of which the following is a full, clear, and exact description.

My improved kite comprises a body and wings, the wings being adapted to be vibrated, or moved, in imitation of the wing-movement of a bird.

The improvement relates to the means for producing the vibration of the wings, to the mode of attaching the string, and to other features of the construction, all substantially as is hereinafter set forth and claimed, aided by the annexed drawings, making part of this specification, and exhibiting a desirable mode of carrying out the improvement and in which—

Figure 1 is a face view of the improved kite; Fig. 2 a cross section of the same on the line 2—2 of Fig. 1; and Figs. 3 and 4 details, upon an enlarged scale, being views of the means for reducing the speed imparted to the wings, Fig. 3 being a view of the gearing from the point of view of Fig. 2, and Fig. 4 being a side view of the parts of Fig. 3.

The same letters of reference denote the same parts.

A represents the body, and B B the wings of the kite, and C represents a wind wheel whose motion is utilized to effect the wing-motion. The forms of these parts can be varied considerably from those shown without departing from the principle of the improvement. The preferred shapes however of the parts respectively are the ones exhibited, the body being extended to form, or being provided with, a head *a*, which is united to the body by means of a neck *a'*; the wings being narrower at the inner end, *b*, thereof, and thence widening substantially as shown; and the wheel C, although it might be otherwise shaped to form a wind-operated wheel, and be otherwise arranged with relation to the body A, being preferably of the double spiral form shown, and being held in an opening *a*<sup>2</sup>, in the body. The wings are arranged preferably directly opposite the body-neck, *a'*, and respectively at opposite sides thereof, and they are pivoted, respectively at *b'*, and *b*<sup>2</sup>, to the central portion of the construction, and, as in the present relative arrangement

of the wings to such central portion the inner end of each wing is opposite both the upper end of the body-proper and the lower part of the head. Each wing is pivoted to both the body and the head, substantially as shown, and so as to enable the wings to be moved with relation to the body as is indicated by the broken lines in Fig. 2. The wheel C is attached to a suitable shaft, *c*, which, in turn, is conveniently journaled in bearings *c'*, *c*<sup>2</sup>, in the body A. Said shaft is provided with a screw *c*<sup>3</sup>, which engages with a screw gear wheel, D, that is journaled in suitable bearings *d*, *d*<sup>2</sup>, upon the central portion of the construction. The wheel, D, is provided with a double crank-shaft *d'* from whose wrists *d*<sup>2</sup>, *d*<sup>3</sup>, pitmen E, E, lead to connect with the wings respectively at *e*, *e*, substantially as shown. The rotation of the wind wheel therefore causes the wings to vibrate in the manner indicated, but, owing to the described reducing-speed gear, the wings do not vibrate as rapidly as the wind-wheel rotates.

I desire not to be restricted to the described mechanism for reducing the speed of the wings. It is possible of course to drive the wings directly from the wind wheel shaft; but in such case the wind-wheel might need to be enlarged to obtain the requisite power, and, again, the vibration of the wings might occur too often. Accordingly I prefer to reduce the speed of the wings substantially as described. The pitmen can work conveniently in the spaces at the sides respectively of the neck, substantially as shown. The wind-wheel is arranged within the body A, partly to provide a guard for it, which is supplied by the surrounding peripheral portion of the body, and partly to bring it nearer the point at which its power is applied to the wings. The form of wind wheel shown is a desirable one generally for the purpose in question, and it is also a convenient one to make, the spirals *c*<sup>5</sup>, *c*<sup>6</sup>, in practice being readily cut from paper and attached to the shaft *c* as shown.

The mode of attaching the string F to the kite is considered a feature of the improvement. Instead of securing it to the central portion of the kite it is secured by means of the guys *f*, *f*, *f*, *f*, or other desirable means, which lead to the wings, and at a point, in each wing, between the inner and outer ends



thereof, and preferably at a point which shall cause the outlying portion of the wings to substantially balance the inlying portion in connection with the central portion of the construction.

So far as employing a wind-wheel for producing desirable effects in a kite is concerned I desire not to be restricted to the movable wings solely in the application of the power derived from the wind-wheel, as the shaft-motion derived from the rotation of the wind wheel can be utilized for various purposes in and about a kite, such, for instance, as moving a head, eyes, tail, or legs, or other attachment, with which the kite may be furnished, or producing a pyrotechnic effect, or operating a signal, or for steering the kite, to which, or other ends, the wind-wheel shaft-motion may be variously transmuted in any desirable manner.

In operation, the kite is held by means of the string and flown in the usual manner. The wind encountering the wheel C causes it and its shaft to rotate, and, in the present instance, the shaft-motion is communicated to the wings causing them to vibrate in the manner described.

I claim—

1. The combination, in a kite, of a central portion and wings, said wings being movable

upon said central portion and said central portion being furnished with a wind wheel, said wings and said wind wheel being connected for the purpose described.

2. The combination of the body, the pivoted wings, and the wind wheel, said wind wheel being attached to a shaft whose motion is communicated to move said wings, substantially as described.

3. The combination of the body, the wings, and the wind-wheel, said wings being pivoted upon said body, and said wind wheel being attached to a shaft which, in turn, by reducing-speed mechanism, is geared to said wings, substantially as described.

4. The combination of the body, the pivoted wings, the wind-wheel, the wind-wheel shaft, the screw, the screw gearing-wheel, the double crank, and the pitmen, substantially as described.

5. The combination, in a kite, of the central body, the pivoted wings, and the string, said string being connected with said kite *via* its wings substantially as described.

Witness my hand this 26th day of August, 1892.

WILLIAM C. VANDEGRIFT.

Witnesses:

C. D. MOODY,

A. BONVILLE.