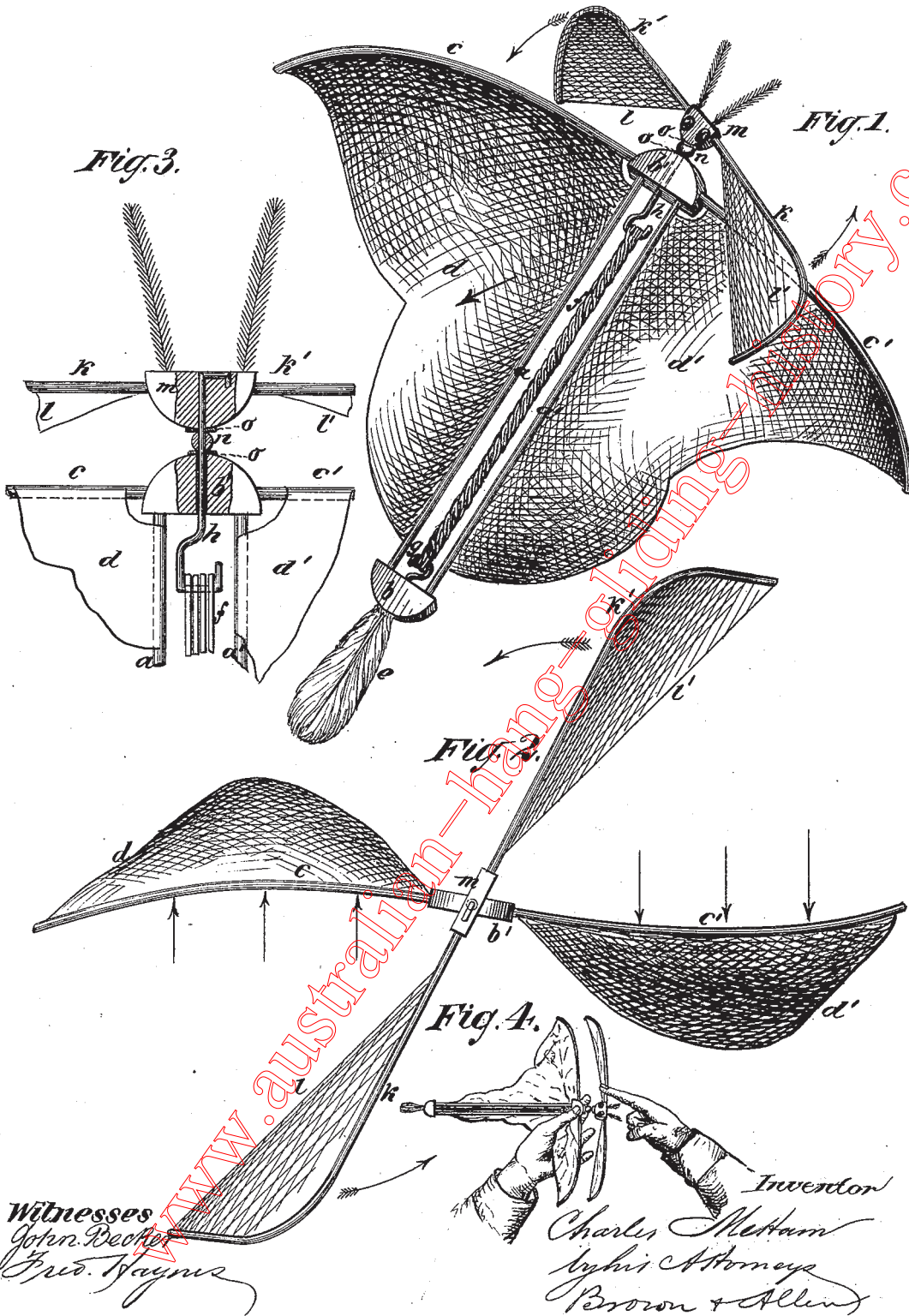


C. METTAM.  
Flying Toy.

No. 202,281.

Patented April 9, 1878.



Witnesses  
John Decker  
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# UNITED STATES PATENT OFFICE.

CHARLES METTAM, OF NEW YORK, N. Y.

## IMPROVEMENT IN FLYING TOYS.

Specification forming part of Letters Patent No. 202,281, dated April 9, 1878; application filed December 15, 1877.

To all whom it may concern:

Be it known that I, CHARLES METTAM, of the city and State of New York, have invented an Improved Flying Toy; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification.

Figure 1 is a perspective view of my improved toy, looking from a point above the same. Fig. 2 is a front-end view of the same. Fig. 3 is an enlarged detail, showing certain features of construction. Fig. 4 is a diagram, illustrating the mode of operating the toy.

The body of the toy is composed of a central longitudinal frame,  $a' b b'$ , laterally-projecting arms  $c c'$ , flexible thin and very light pieces  $d d'$  of paper, textile material, or other thin and light membranous or leathery material, which form a kite, operating similarly to the well-known Japanese kite, and a tail,  $e$ .

The motor  $f$  is a strip or a bundle of strips of caoutchouc, one end of which is rigidly attached to a hook,  $g$ , and the other end of which is attached to the hook  $h$ . The shank of the hook  $h$  is straight, and forms a shaft for a propeller, hereinafter described, which shaft has its bearing in the part  $b'$  of the aforesaid longitudinal frame  $a' b b'$ .

The propeller consists of two screw-blades, formed by extending pieces  $l l'$ , of light, thin, textile, papery, or other suitable thin and light material, on the arms  $k k'$ , which arms are bent so as to incline the said extended pieces  $l l'$  in opposite directions, and to give them the form and the effect of a screw-propeller.

The arms  $c c'$ , as seen from the front in Fig. 2, are bent in an opposite direction to that of the arms  $k k'$ , in order to give the body of the toy, when the same is moving through the air, the effect of a screw of opposite inclination to the direction in which the propeller-screw tends to turn the body of the toy, and thus to prevent the said body from turning on its longitudinal axis through the reaction of the motor  $f$  upon said body; and both the arms  $c c'$  and  $k k'$  are bowed backward toward the tail  $e$ .

I prefer to make the pieces  $l l'$  and  $d d'$  of Japanese paper, this material having great strength relatively to its weight.

The shank of the hook  $h$  is prevented from being pulled out of the part  $b'$  of the frame by a

head,  $m$ , attached to said shank; and between said head  $m$  and part  $b'$  of the aforesaid frame I place on the said shank a glass bead,  $n$ , or perforated glass or porcelain ball, which acts as an anti-friction device upon small metallic washers  $o$ , placed on each side of said bead or ball. In this way I prevent the rapid absorption of motive power otherwise caused by the pull of the motor  $f$ .

The side pieces  $a a'$  and the arms or bows  $c c' k k'$  are made of very light, strong wood, or other light suitable material. The parts  $b b'$  of the frame are preferably made of cork; but other light and strong material may be substituted therefor.

To operate this toy, the part  $b'$  is grasped from the rear by the thumb and forefinger of the left hand, and with a finger of the right hand the screw is turned from the operator in the same direction as that in which the hands of a clock turn, as illustrated in Fig. 4. From fifty to eighty turns should be given to the screw. The toy should then be placed upon a table or other flat surface, with that side shown in Fig. 1 uppermost, and a finger pressed upon the part  $b'$ , to hold the toy still and prevent the propeller-screw from turning till the toy is desired to start. Then, upon suddenly lifting the finger which confines it, the toy immediately rises and flies about the room, its movement imitating very naturally the movement of a bird, and creating much astonishment and amusement.

I claim—

1. The combination, with the caoutchouc torsion-spring motor  $f$  and the hook  $h$ , the shank of which forms a shaft for the propeller-screw and passes through the part  $b'$  of the frame, of the loose perforated glass or porcelain ball or bead  $n$  and the loose washers  $o o$ , to form a friction-bearing for said shaft, substantially as and for the purpose described.

2. The combination of the frame  $a a' b b'$ , the kite  $d d'$ , supported partly by said frame and by arms  $c c'$ , which extend laterally from the front of said frame, and are bent substantially as described, with the torsion-spring motor  $f$  and the screw-propeller  $k k' l l'$ , substantially as and for the purpose set forth.

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Witnesses:

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