

931,026.

Patented Aug. 17, 1909.

Fig. 1.

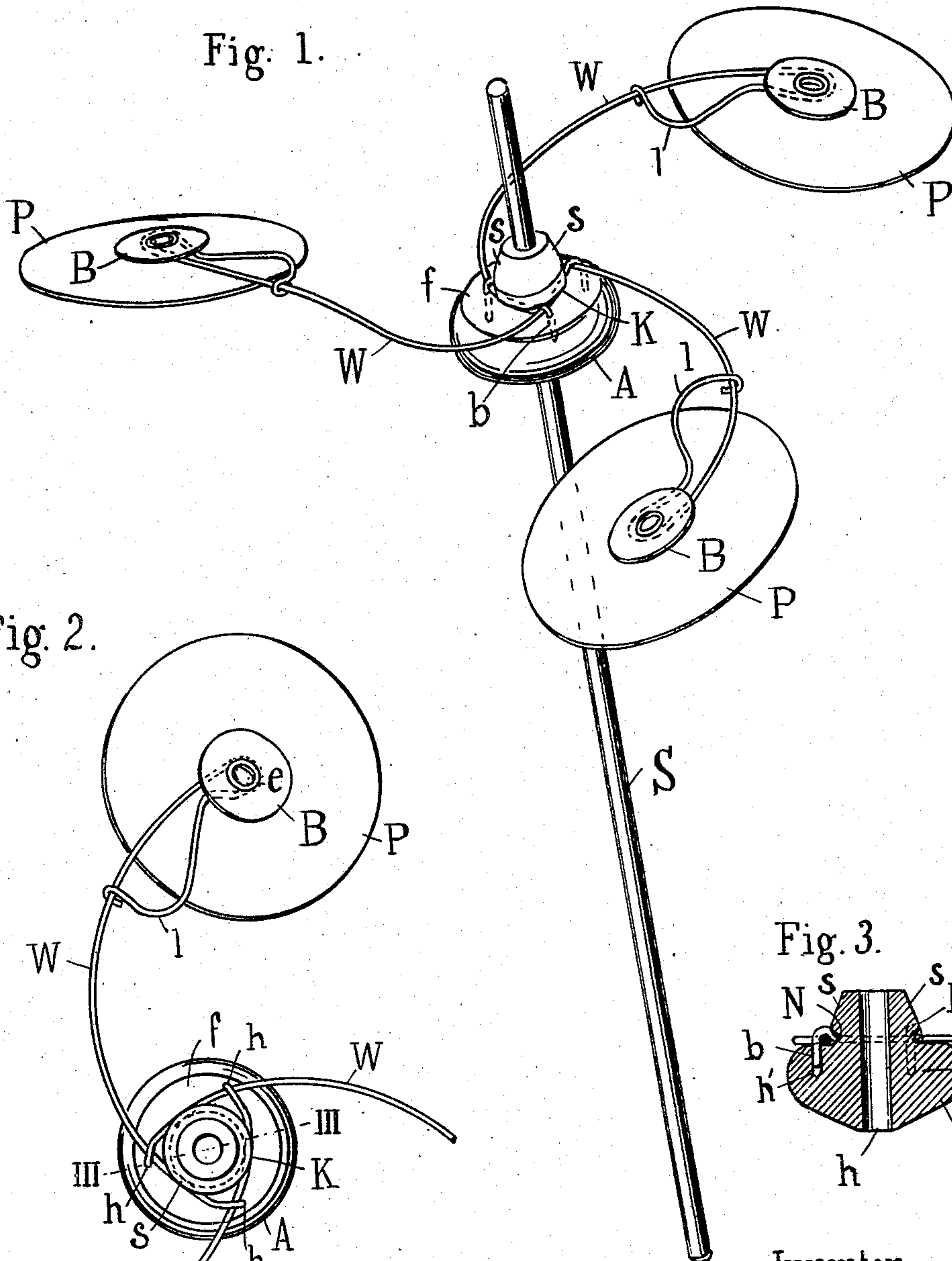


Fig. 2.

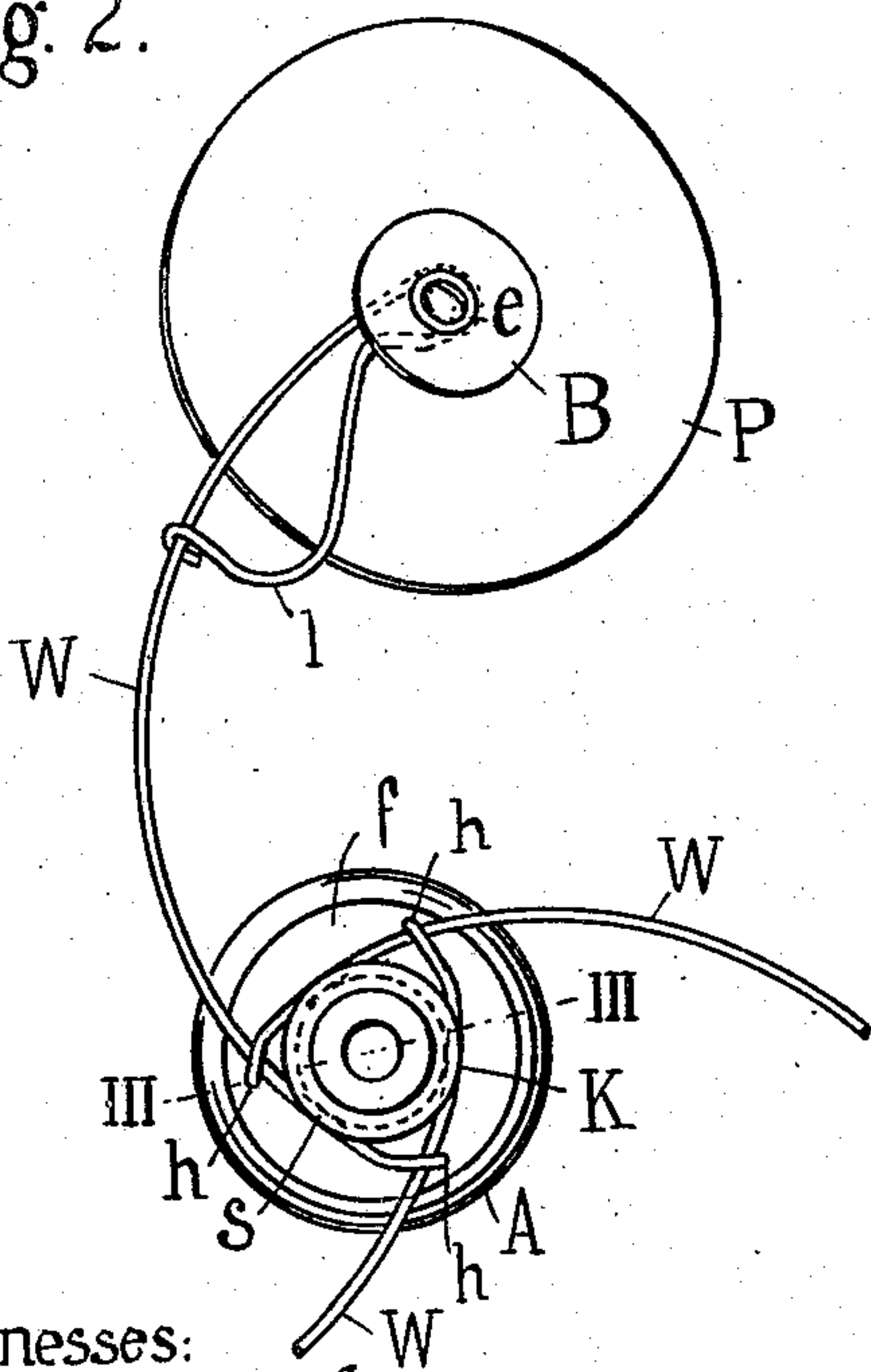
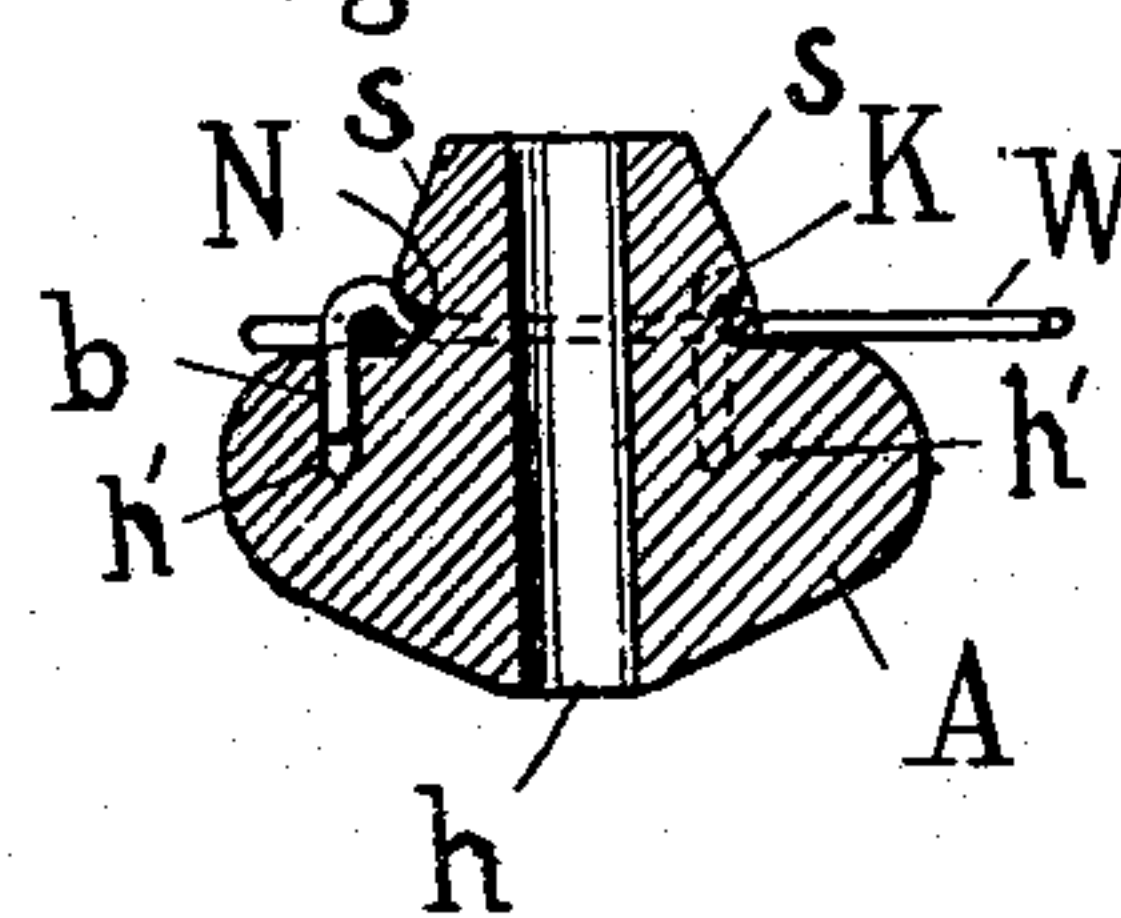


Fig. 3.



Witnesses:

Chas. L. Curtis
Frank C. Cole

Inventor,

Caesar R. Bannihir
by *Samuel W. Bales*
Attorney.

UNITED STATES PATENT OFFICE.

CAESAR R. BANNIHR, OF NEW YORK, N. Y.

AERODART.

No. 931,026.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed December 24, 1908. Serial No. 469,086.

To all whom it may concern:

Be it known that I, CAESAR R. BANNIHR, a citizen of the United States of America, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Aerodarts, of which the following is a specification.

The object of this invention is to provide a suitable mounting for blades around a hub of simple, durable and inexpensive construction whereby a wheel is formed which may be utilized either as a propeller acting upon the air or as a wind-wheel which is rotated by the air. The wheel has been devised with the former object especially in view, and is illustrated in a device which is particularly adapted as a game implement to be projected through the air from one player to another or as a toy for individual amusement.

In the accompanying sheet of drawings which forms a part of this application, Figure 1 is a perspective of an aerodart constructed in accordance with my invention. Fig. 2 is a plan view showing the hub and one blade with its connecting spring wire and the spring wires for the other blades partly broken away. Fig. 3 is a section through the hub on the line III—III of Fig. 2.

A hub A, conveniently of wood, has a flat face *f* surmounted by a central knob K which is joined to the flat face of the hub by a neck N. The sides *s* of the knob taper, the greatest diameter adjoining the neck. There is a hole *h* through the axis of the hub and knob, and smaller holes *h'* *h'* in the flat face at equal distances from the axis and evenly spaced. A shaft S snugly fits the central hole in the hub. A plurality of spring wires W W, one for each of the blades, three being illustrated, have each a short branch *b* at right angles which engages one of the smaller holes in the hub. The wires are interlocked, each engaging the angle of an adjoining wire, and the portion of each wire midway between its angle and the point of engagement with the angle of the next wire underlies the knob and is thereby securely held.

In assembling, the wires are first interlocked and the branches which are to engage the holes brought to the proper spacing. They are then sprung over the tapered sides of the knob into place. At the outer or projecting end of each of the wires an elongated loop *l* is formed. The sides of the loop are brought nearly together so as to form two unequal communicating eyes, the one at the extreme

end being the smaller. Blades P, consisting conveniently of circular disks, which may be of fiber, paper or other material combining the requisite lightness and strength are carried at the ends of the wire loops. A button B, which may be a smaller disk of the same material, is centrally attached to each blade by an eyelet *e*. A blade can be inserted or removed by bringing the button opposite the larger eye in the loop, where it can be passed through with or without a slight springing of the wire. The loops are bent out of the plane of revolution so that the blades will be suitably inclined to engage the air and sustain or propel the dart upward and forward as it revolves. The spring wires by reason of their elastic character, and further by reason of their being curved as shown, serve to reduce the force of impact in case a blade should come in contact with any object in the course of the flight of the dart, thereby averting injury both to the blade and the object with which it may come in contact.

The aerodart when employed in a game is held by its shaft between the palm of the left hand and the fingers of the right hand with the palms parallel. The shaft is inclined slightly forward from the vertical in the direction in which the dart is to be projected, and it is given a quick rotary movement by sliding the right hand forward, the shaft rolling between the palms. The aerodart first rises until the upward propulsive force of the blades is reduced to the weight of the aerodart and then it glides forward in the direction of inclination, the blades serving as gliding planes. Gyroscopic action keeps the aerodart at the same inclination throughout its flight. The aerodart is passed from one player to another under rules, for example, such as are observed in playing tennis, but on a smaller court. The game, however, is not restricted to this manner of playing.

What I claim as new, and desire to secure by Letters-Patent of the United States, is—

1. The combination of a hub, a plurality of spring wires attached to the hub, and suitably inclined blades carried by the wires.
2. The combination of a hub, a plurality of curved spring wires attached to the hub, and suitably inclined blades carried by the wires.
3. The combination of a hub, a plurality of spring wires attached to the hub with loops formed of their projecting ends, and a plurality of blades each of which is provided

with a centrally disposed button which is engaged by one of the spring wire loops.

4. The combination of a hub, a plurality of spring wires attached to the hub each of which has its projecting end folded over to form an elongated loop the sides of which are brought nearly together so as to form two communicating unequal eyes the smaller of which is at the outer end, and a plurality of blades each of which is provided with a centrally disposed button which is engaged by the smaller eye of a loop.

5. The combination of a hub, a knob joined thereto by a neck, a plurality of interlocking spring wires in engagement with the neck between the interlocking points, and blades carried by the wires.

6. The combination of a hub, a knob joined thereto by a neck, a plurality of interlocking spring wires in engagement with the neck between the interlocking points, the ends of the wires adjoining the interlocking points being embedded in the hub, and blades carried by the wires.

7. The combination of a hub, a knob joined thereto by a neck, a plurality of interlocking spring wires in engagement with the neck between the interlocking points with loops formed on their projecting ends, and a plurality of blades each of which is provided with a centrally disposed button which is engaged by one of the spring wire loops.

8. In an aerodart, the combination of a shaft, a hub secured thereto, a knob joined to the hub by a neck, a plurality of interlocking spring wires in engagement with the neck between the interlocking points with loops formed on their projecting ends, and a plurality of suitably inclined blades each of which is provided with a centrally disposed button which is engaged by one of the spring wire loops.

Signed at New York, N. Y., this 23rd day of December, 1908.

CAESAR R. BANNIER.

Witnesses:

SAMUEL W. BALCH,
HUGH H. SENIOR.