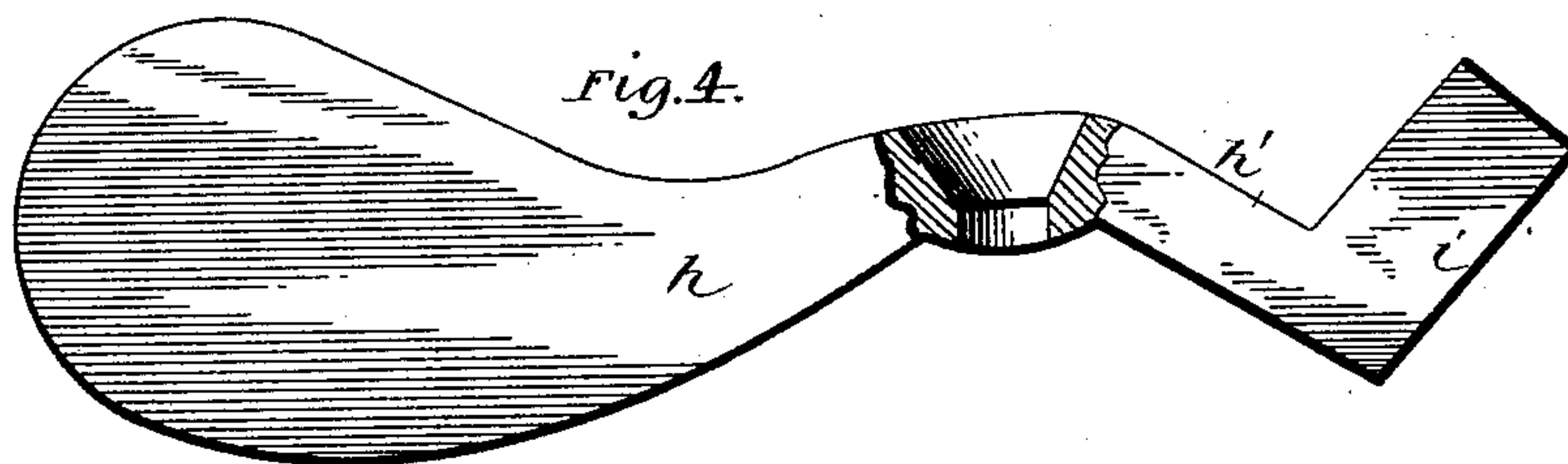
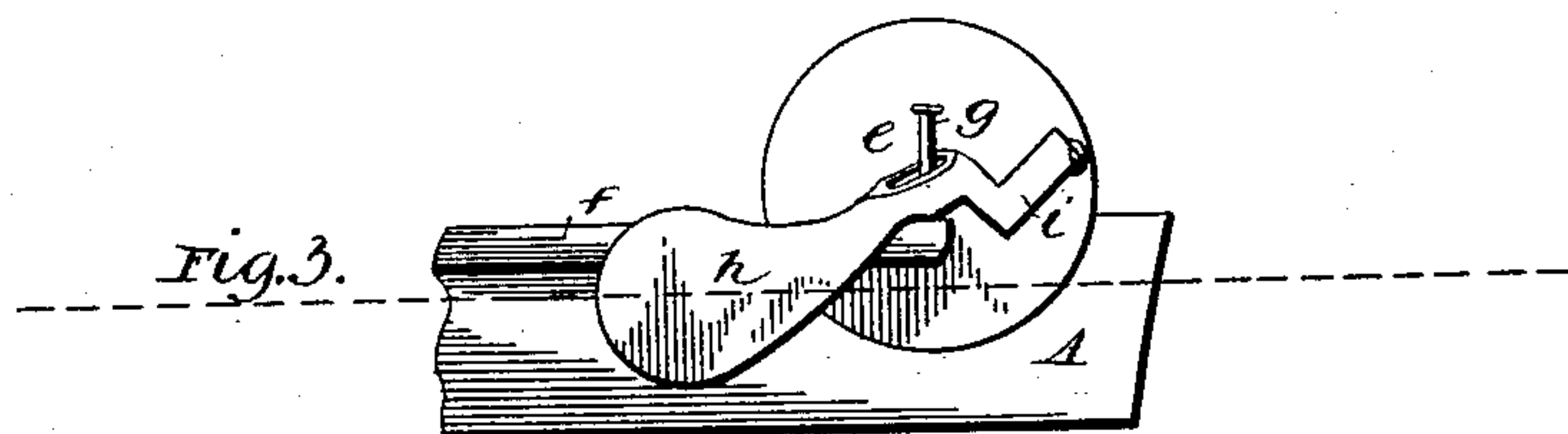
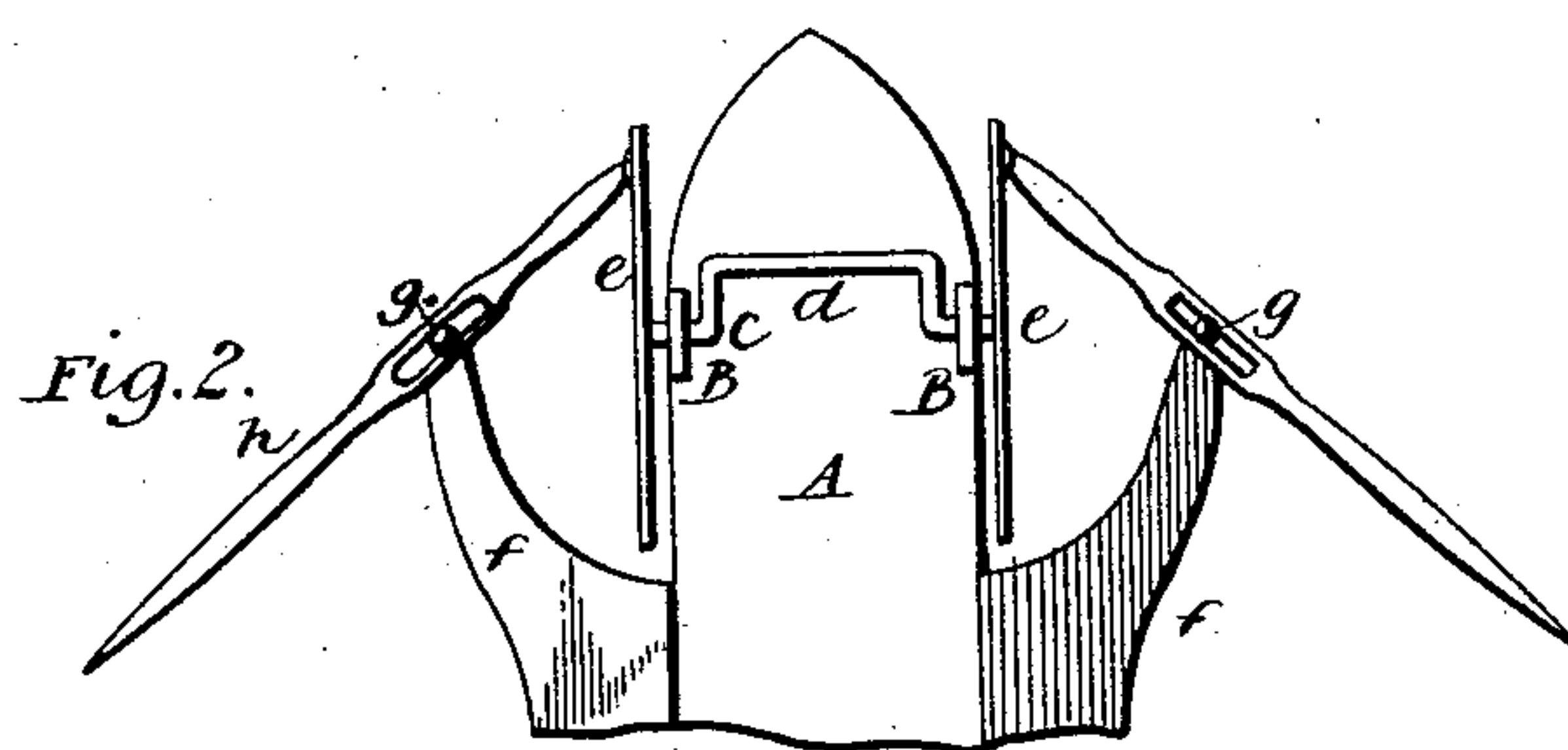
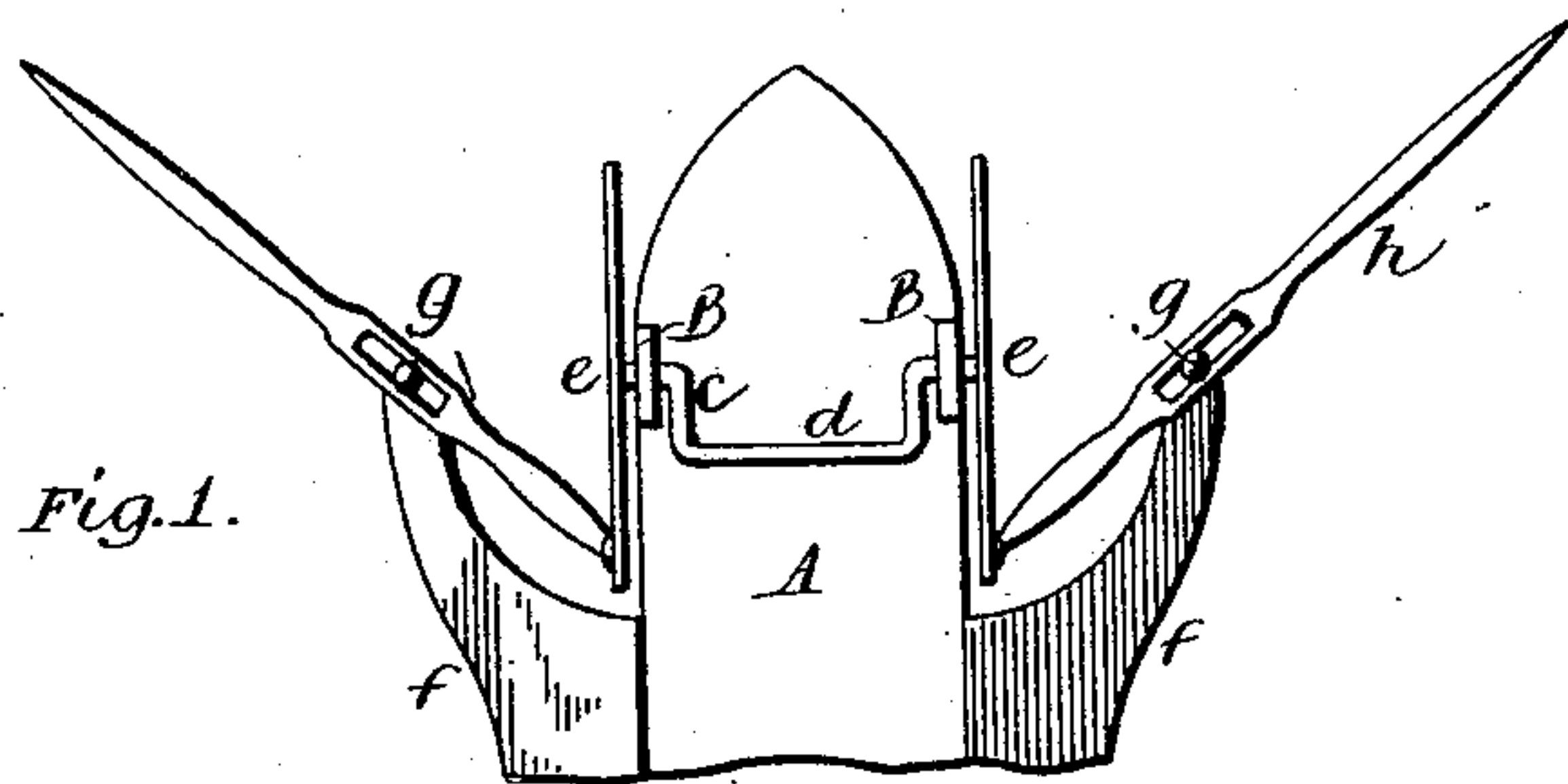


(No Model.)

D. W. HORTON.
PROPELLER.

No. 454,272.

Patented June 16, 1891.



WITNESSES:

Wm. T. Norton
Chas. H. Cooper

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UNITED STATES PATENT OFFICE.

DAVID W. HORTON, OF PETERSBURG, INDIANA.

PROPELLER.

SPECIFICATION forming part of Letters Patent No. 454,272, dated June 16, 1891.

Application filed July 5, 1890. Serial No. 357,865. (No model.)

To all whom it may concern:

Be it known that I, DAVID W. HORTON, a citizen of the United States, residing at Petersburg, in the county of Pike and State of Indiana, have invented certain new and useful Improvements in Vibrating Propellers; 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 appertains to make and use the same.

My invention relates to vibrating propellers, and has among its several objects increased facilities for propelling a boat, for backing, and for retarding and stopping its progress, and to impart to the paddles a movement that shall imitate as much as possible the movement of an oar during the operation of rowing; and my invention consists in certain new and novel features of construction and operation, all of which will fully appear from the following description, drawings, and claims.

In the drawings, Figure 1 indicates in plan view my invention applied to a boat, showing the paddles about to enter the water; Fig. 2, a similar view, but showing the paddles about to leave the water; Fig. 3, a side elevation of the device in the position indicated by Fig. 2; Fig. 4, an elevation of one of the paddles, partly broken away to show the central opening.

A indicates the boat, and B B two standards extending above the gunwale and serving as supports for the shaft *c*. This shaft is revolved by means of the crank *d*, which is preferably located centrally of the same. Disks *e* are mounted on the ends of the shaft, which project beyond the width of the vessel, thus allowing the disks to revolve free of the sides. Arms *f*, which are attached to the gunwale in any suitable manner, extend outward to points opposite the central line of the shaft, and are provided at their extremities with the vertical spindles *g*.

h h are the paddles, which are centered on the spindles *g*, the peculiar shape of the slot in the paddle through which the spindle passes permitting a movement of the paddle in almost every direction. The inner ends of the paddles are formed with the bends *h' h'* and the flat extensions or blades *i i*, which

serve to displace the water and aid in propelling the boat until the revolution of the disks shall have raised them out of the water and caused the outer blades to take up the stroke, thus constituting a double-ended paddle, and are connected to the disks near their outer edges by means of universal joints. The crank being revolved, a circular motion is imparted, through the agency of the disks, to the inner ends of the paddles, which vibrates the blade of the paddle and carries it alternately in and out of the water. The peculiar vibration of the paddles produces a feathering of the blade and an inclination of the same while entering and leaving the water, and during the entire length of the stroke the blade assumes a vertical position. The crank may be operated by an engine or by foot or hand power, according to the size of the boat.

When it is desired to check the speed of the boat, the propeller is revolved until its blade is entirely under water, when the revolution is stopped, and the resistance of the blade against the water immediately checks the speed and eventually stops the progress, or the motion may be reversed.

I claim—

1. In vibrating propellers, the combination, with the gunwale of a vessel and an arm or support extending outward at right angles thereto, of a propeller also extending outward from the gunwale, and consisting of a blade and arm centrally pivoted on such support, the inner end of the arm having crank connection with a shaft and adapted to be revolved thereby, as and for the purpose set forth.

2. In combination, the standards, located as described, the crank-shaft journaled on said standards, the disks connected to the ends of the shaft, and the paddles, pivoted as described and having their inner ends loosely connected to the disks, all as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

DAVID W. HORTON.

Witnesses:

ARTHUR BROWNING,
F. L. BROWNE.