

(No Model.)

3 Sheets—Sheet 1

T. B. HEATHORN.
PROPELLER.

No. 510,970.

Patented Dec. 19, 1893.

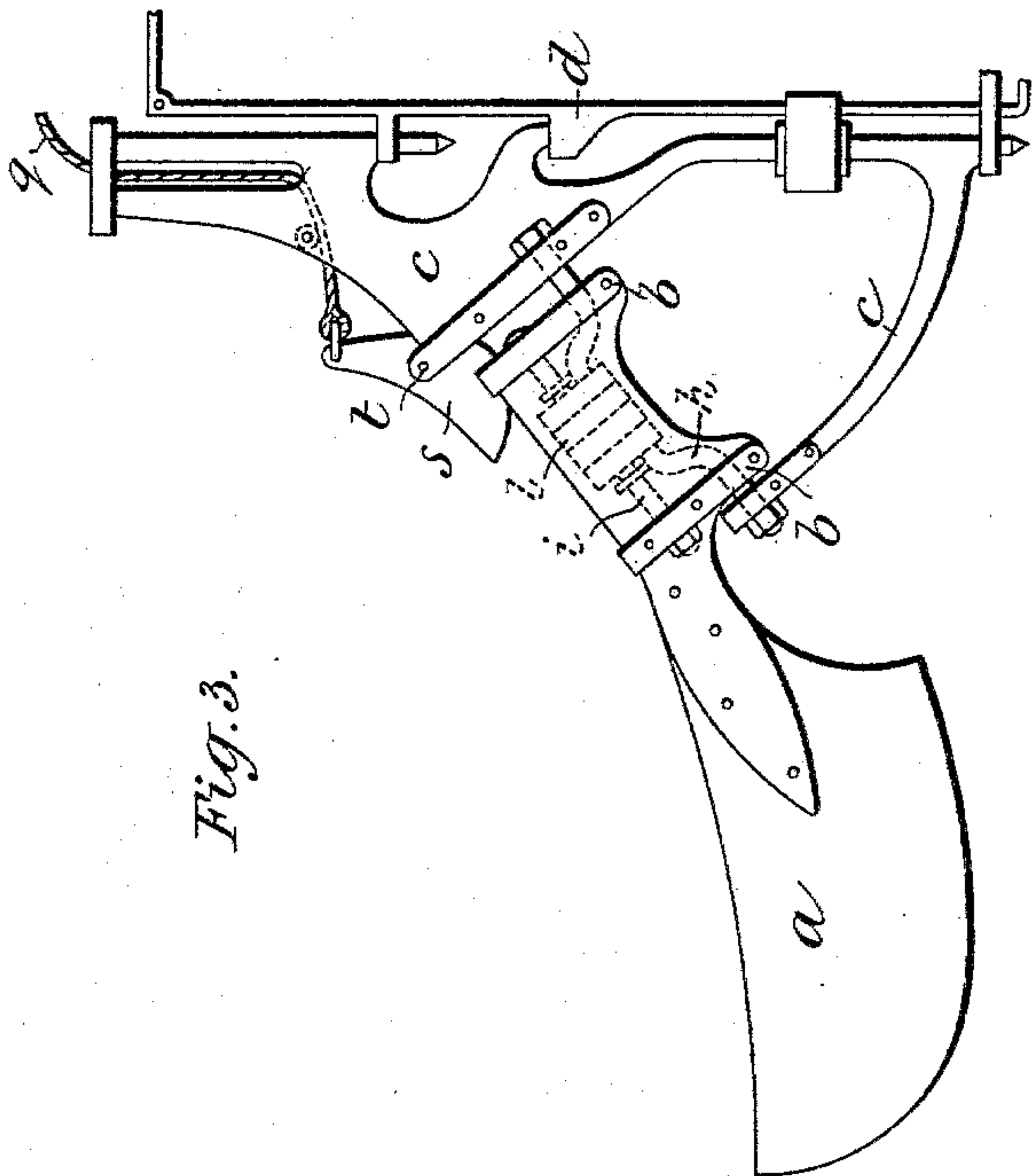


Fig. 3.

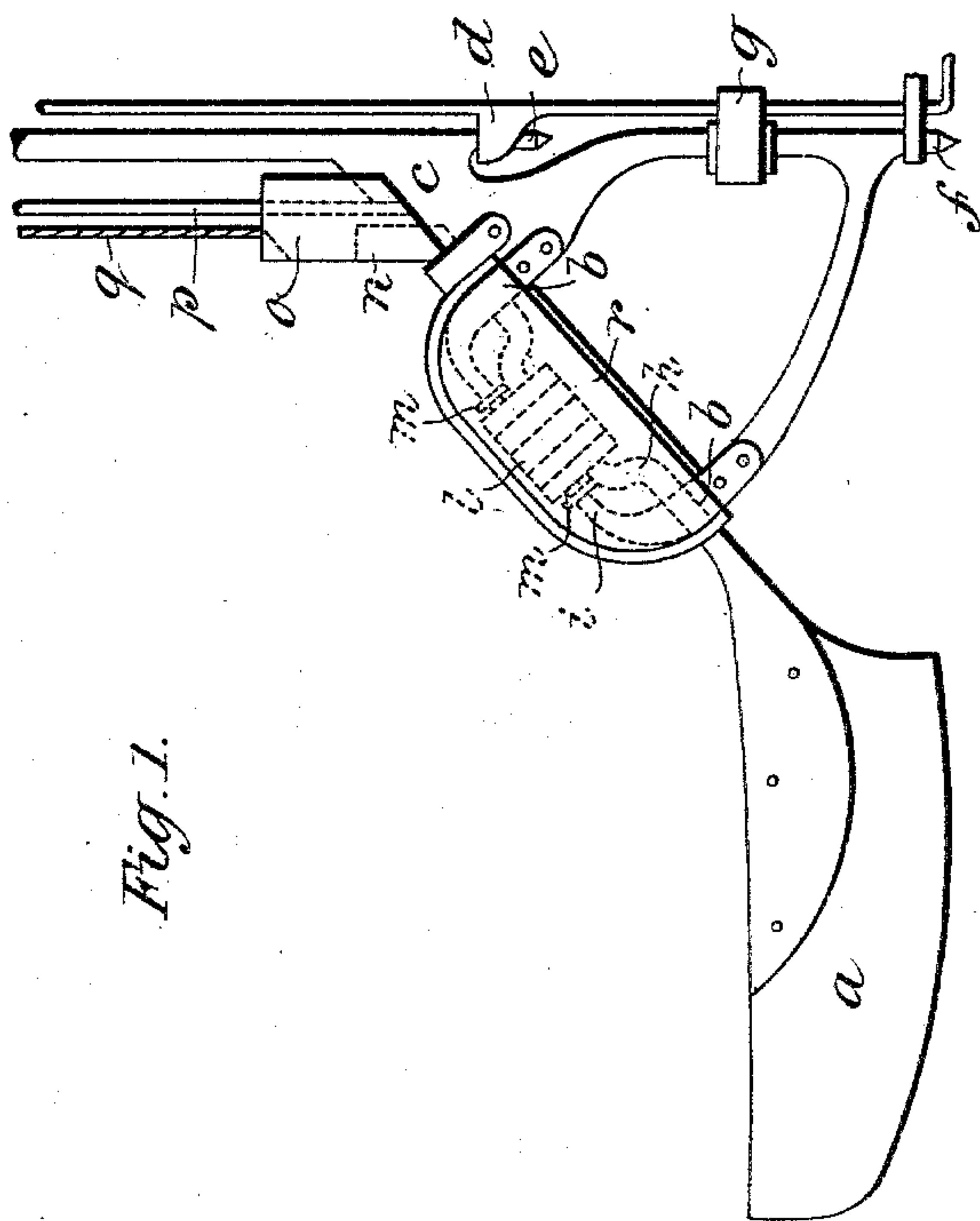


Fig. 1.

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Herbert W. Jenner.

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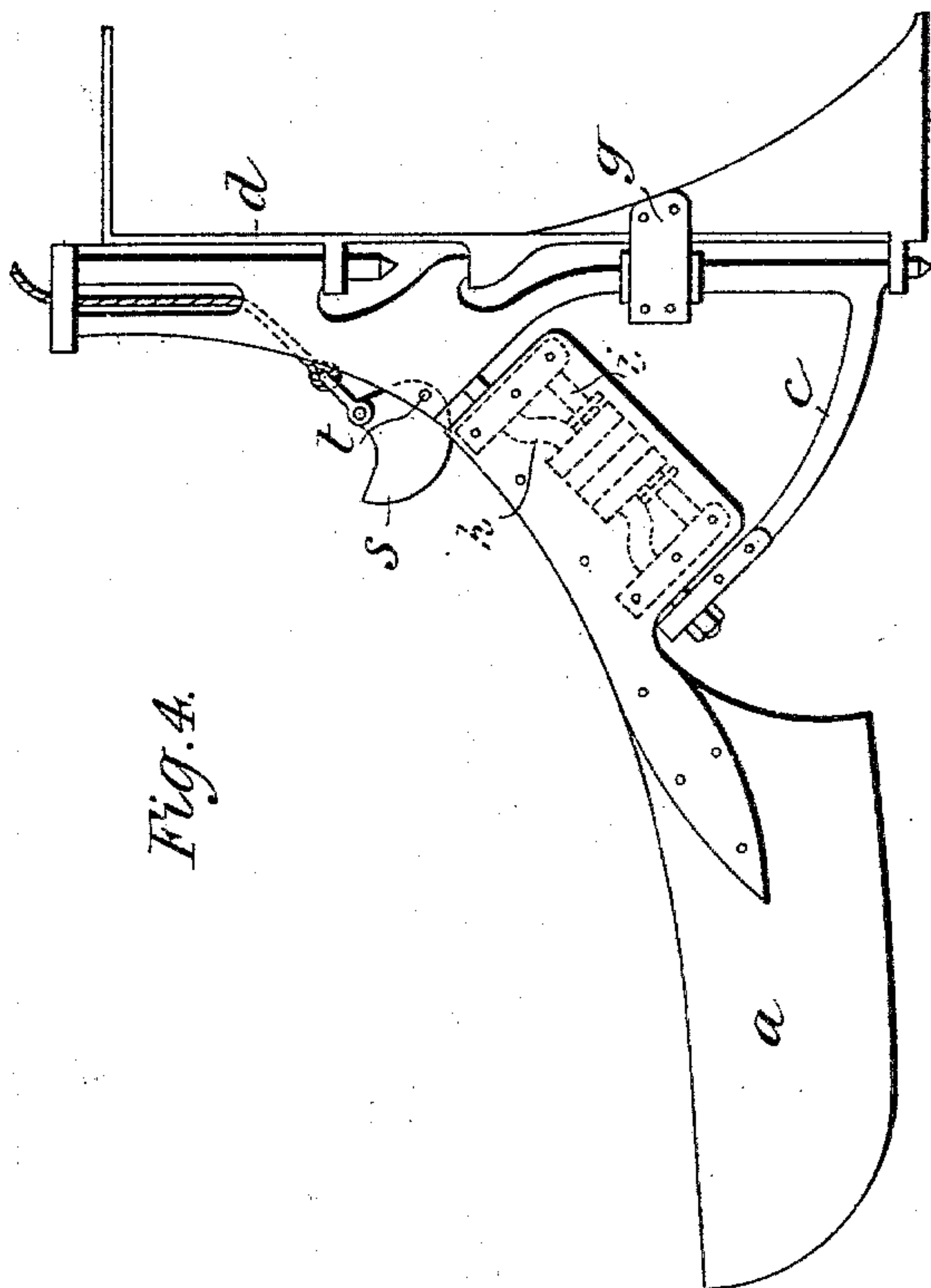


Fig. 4.

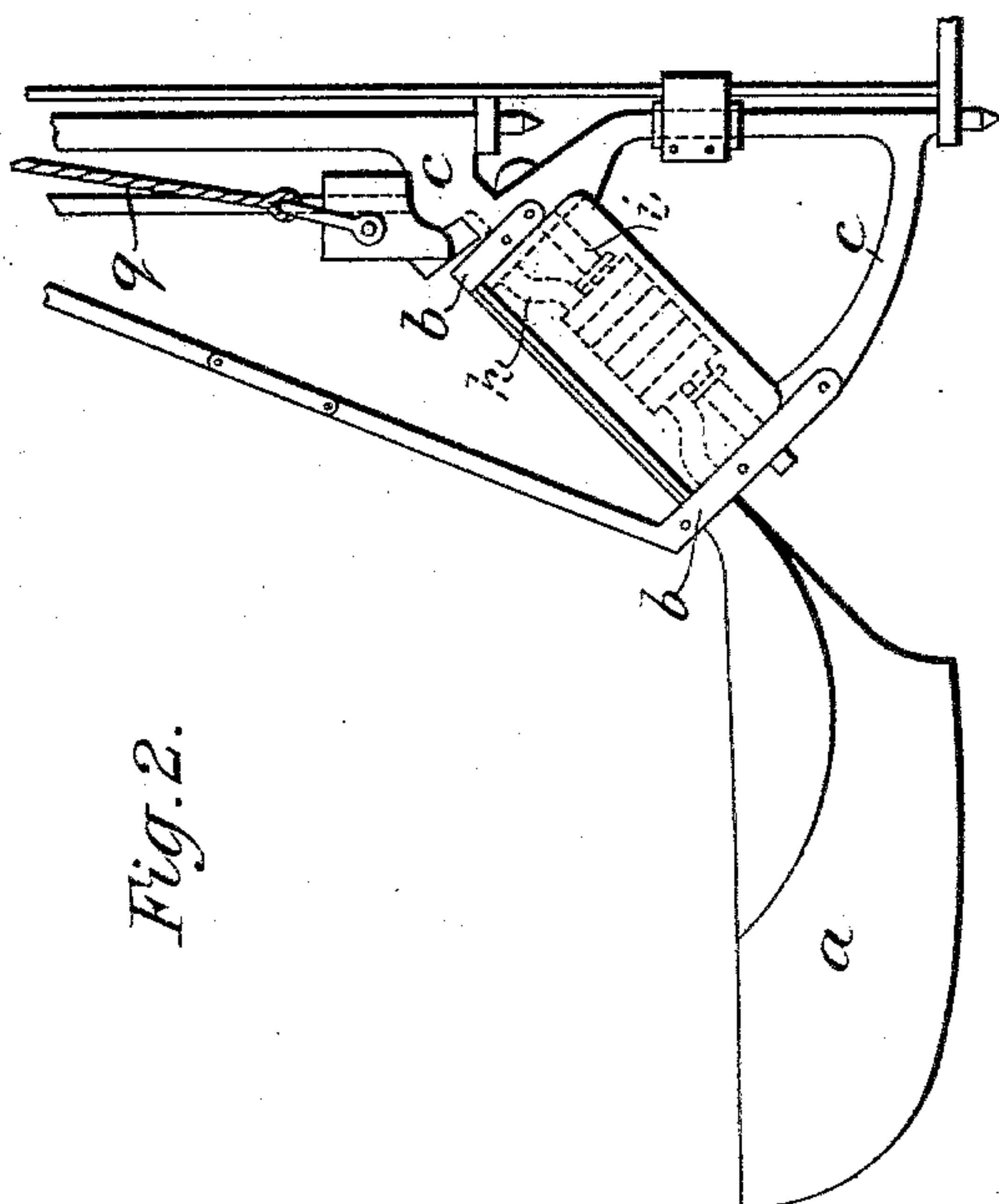


Fig. 2.

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(No Model.)

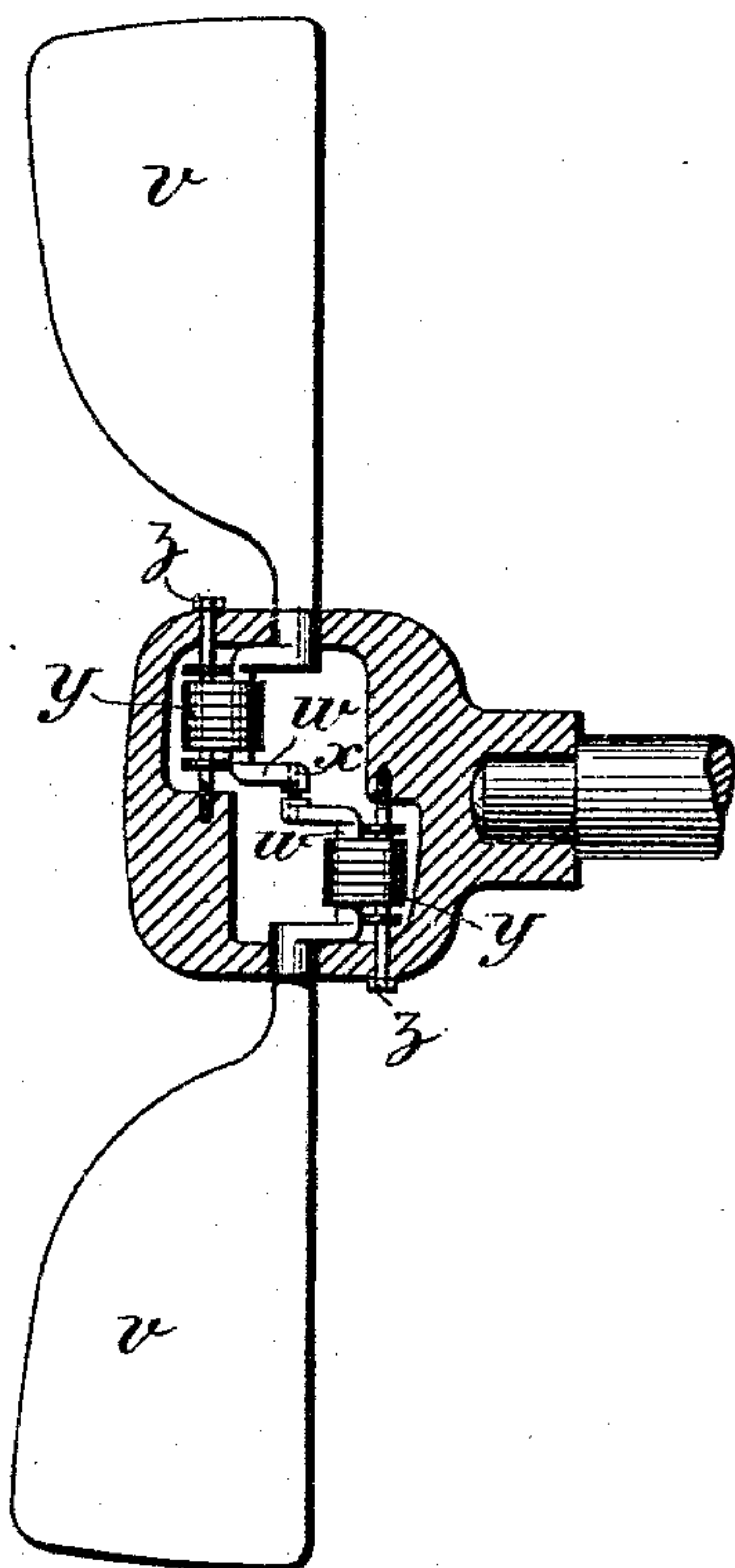
T. B. HEATHORN.
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Fig. 5.



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UNITED STATES PATENT OFFICE.

THOMAS BRIDGES HEATHORN, OF LONDON, ENGLAND.

PROPELLER.

SPECIFICATION forming part of Letters Patent No. 510,970, dated December 19, 1893.

Application filed June 26, 1893. Serial No. 478,886. (No model.)

To all whom it may concern:

Be it known that I, THOMAS BRIDGES HEATHORN, a subject of the Queen of Great Britain and Ireland, residing at 10 Wilton Place, Knightsbridge, London, in the county of Middlesex, England, have invented certain new and useful Improvements in Propellers for Boats, Aerial Vehicles and the Like; 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.

This invention relates chiefly to the construction of propellers of that class in which the vessel is propelled and steered, or its motion retarded, by the action of a single vibrating stern paddle or rudder to which is imparted a compound motion comprising a primary oscillation about the axis of the rudder post, due to the motor effort and a secondary oscillation about an independent axis in the rudder frame, due to the turning or tilting of the rudder blade caused by the resistance of the water or other medium when so oscillated about the rudder post axis; and has for its object to insure the return of the propeller blade to its normal position in the oscillating rudder frame after being displaced by the aforesaid secondary oscillation, and to provide means for locking the rudder or propeller blade securely to the rudder post or frame when employed as a rudder only.

In the accompanying three sheets of illustrative drawings:—Figure 1 represents a side elevation of a propeller for boats and the like constructed according to this invention and Figs. 2, 3, and 4 represent side elevations of modified arrangements of the same. Fig. 5 represents a sectional elevation of a screw propeller provided with my improvements.

Referring to Fig. 1 the rudder propeller blade *a* is mounted in bearings *b* in the oscillating rudder frame *c* secured to the stern post *d* by the pivots *e*, *f* and bearings *g* and is provided with a crank *h* oscillating with it and connected to a bar *i* by means of rings or bands *l* of india rubber or other suitable elastic material so that, as the rudder *a* is displaced from its central position in either direction, it is caused by the said springs to return to its normal and central position as will be readily understood. Rollers *m*, on

which the crank *h* is pressed and rolls, are mounted on the rod *z* and serve to reduce the frictional resistance to the motion of the rudder blade.

In order to lock the rudder blade *a* and the rudder frame *c* together and prevent their independent oscillation, when it is desired to use the blade *a* as a rudder only, a locking crank *n* is formed on the end of the rudder crank *h* capable of engaging with a block *o* sliding on a guide bar *p* and controlled from above by means of a connecting cord *q*. A suitable casing *r* is provided to inclose the working parts and preserve them from injury.

Fig. 2 represents a similar arrangement to Fig. 1 the crank *h* and bolt *i* being inverted as clearly shown.

In the modification shown in Fig. 3 the crank *h* is secured to the rudder frame, the propeller blade *a* being mounted thereon by bearings *b*. A cam *s* pivoted at *t* in the rudder frame, and controlled from above by the cord *q*, engages with the propeller blade when desired and locks it and the rudder frame together.

Fig. 4 represents a similar arrangement to Fig. 3, the crank *h* and bolt *i* being inverted.

In the arrangement of screw propeller shown in Fig. 5 the blades *v* are formed with cranks *w*, and connected together by a pin *x*, and are returned to their normal positions when displaced by elastic rings *y* which connect the cranks *w* and pins *z* as will be readily understood.

What I claim, and desire to secure by Letters Patent, is—

1. The combination, with a frame for supporting a propeller blade, of a propeller blade journaled in the said frame, one of the said parts being provided with a crank and the other said part being provided with a bar arranged parallel with the crank, and bands of elastic material encircling the said crank and bar, whereby the propeller blade is restored to its normal position, substantially as set forth.

2. The combination, with the stern post of a vessel; of a frame pivoted thereto, and a propeller blade journaled in the said frame, one of the said parts being provided with a crank and the other said part being provided with a bar arranged parallel with the crank;

bands of elastic material encircling the said crank and bar, and a locking device for rigidly securing the propeller blade in the frame when desired, substantially as set forth.

- 5 3. The combination, with the stern post, of the frame *c* pivoted to the stern post and provided with the bar *i*, the propeller blade journaled in the said frame and provided with the crank *h*, bands of elastic material encircling the said bar *i* and crank *h*, and a re-
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tractible locking device operating to rigidly secure the propeller blade to the frame when desired, substantially as set forth.

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

THOMAS BRIDGES HEATHORN.

Witnesses:

WILLIAM H. WHEATLEY,
ALBERT JONES.