

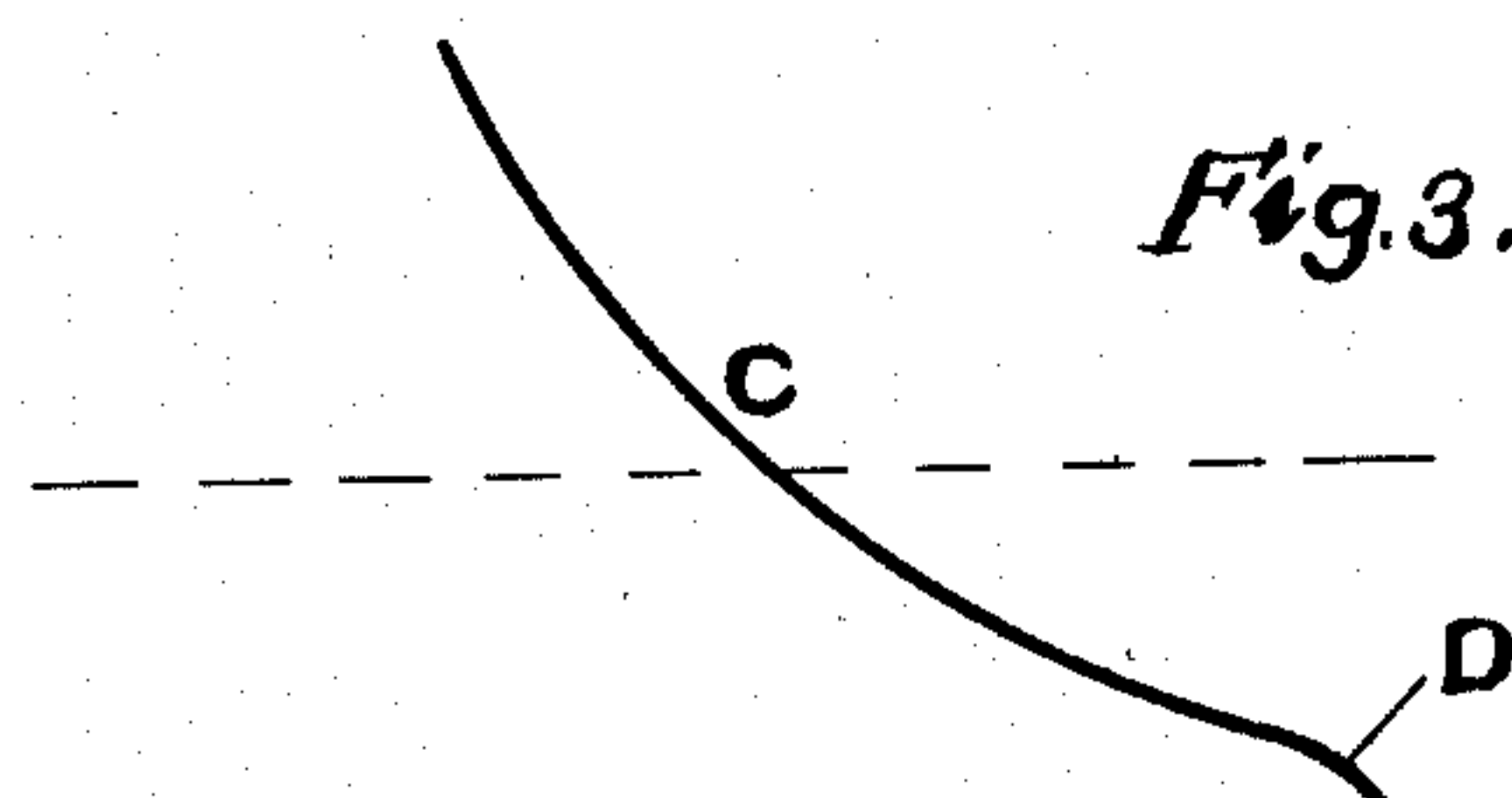
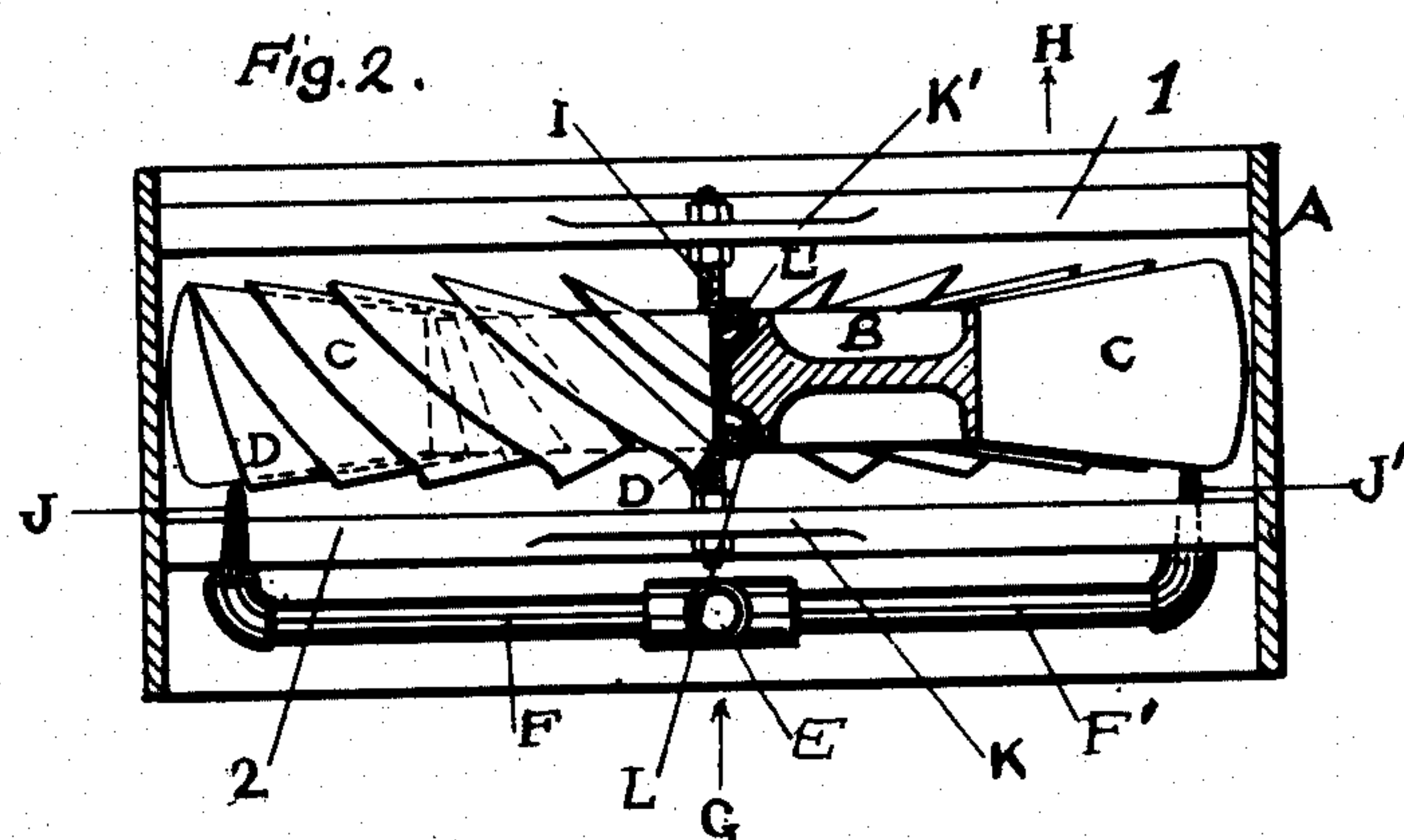
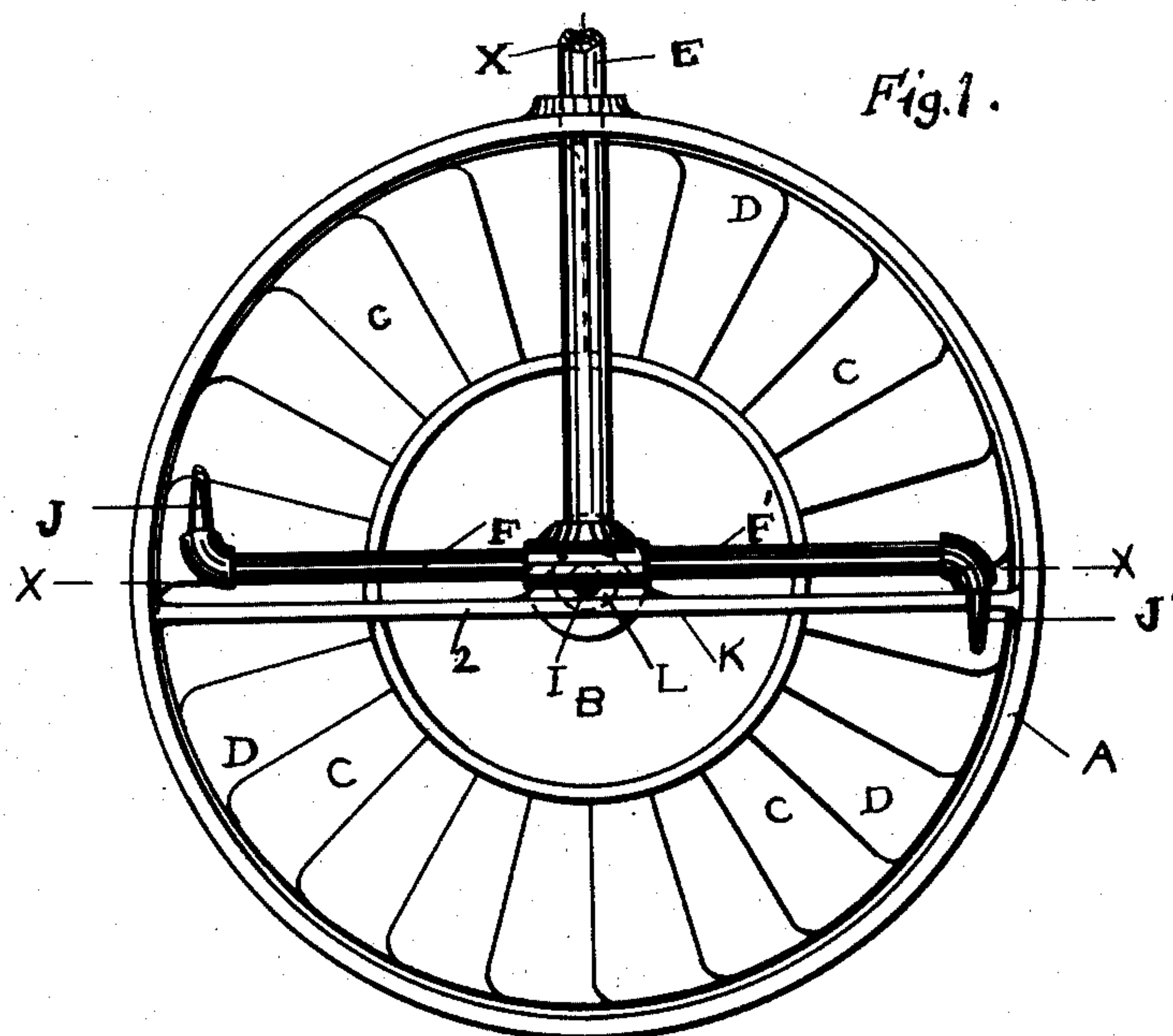
No. 864,399.

PATENTED AUG. 27, 1907.

L. J. WING.
CENTRIFUGAL FAN AND TURBINE ENGINE.

APPLICATION FILED SEPT. 20, 1905.

2 SHEETS—SHEET 1.



Witnesses
S. P. Tompkins
W. S. Wheeler.

By *Levi Julian Wing* Inventor
Attorney *Herman Haupt Jr.*

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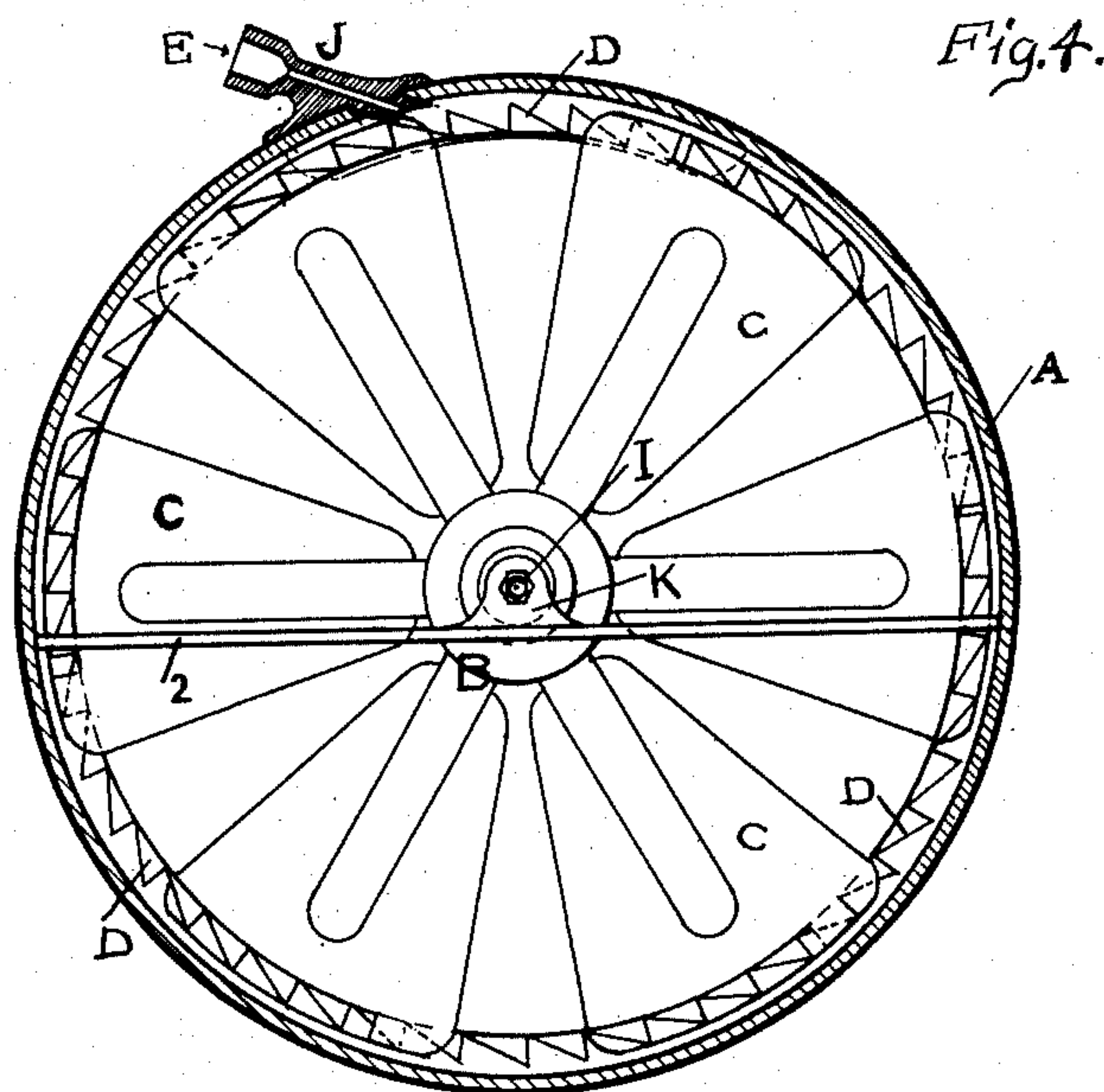


Fig. 4.

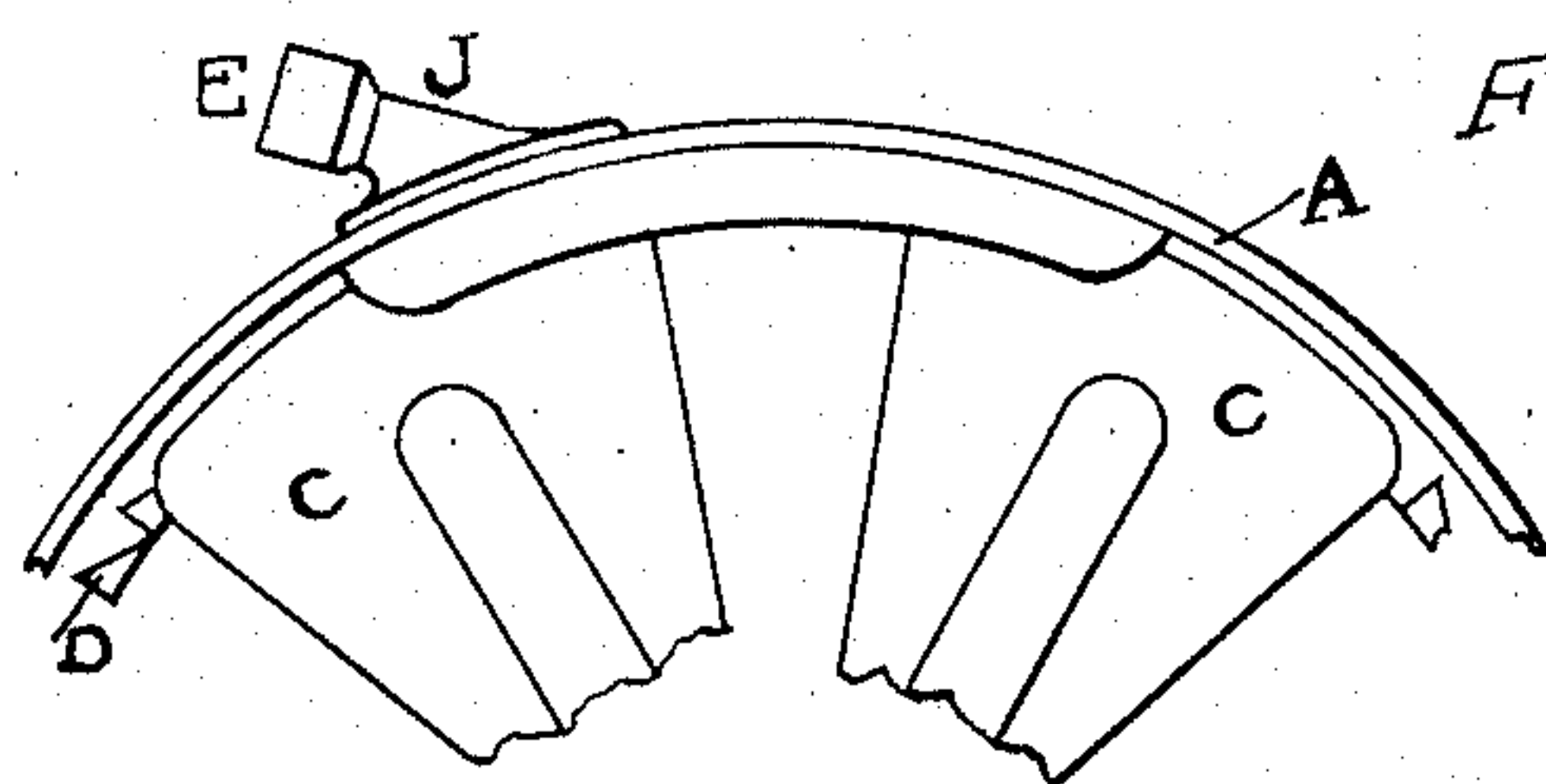


Fig. 5.

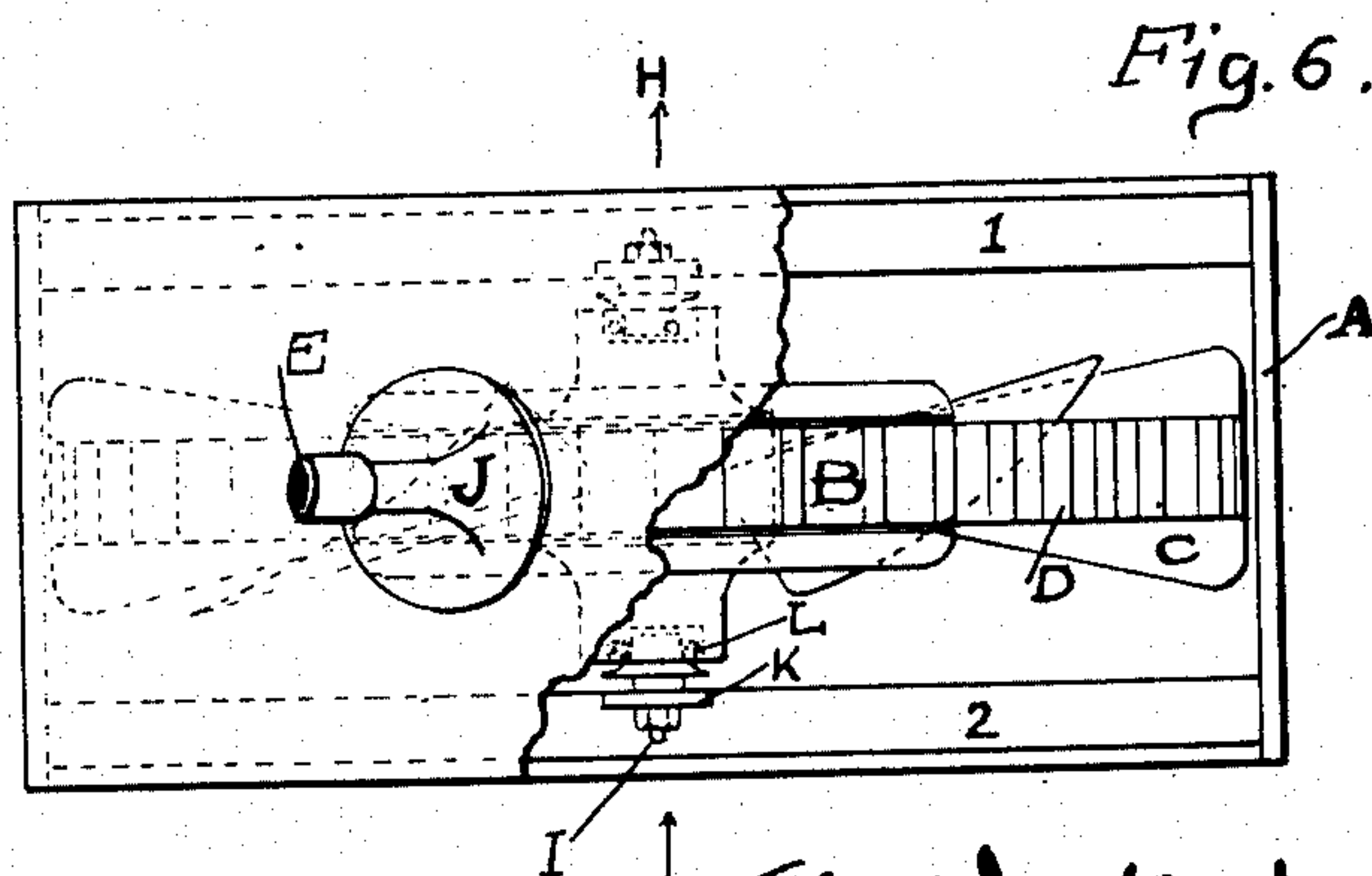


Fig. 6.

Witnesses
S. C. Tompkins.
H. S. Wheeler,

By *L. J. Wing* Inventor
Attorney *Stamps & Co.*

UNITED STATES PATENT OFFICE.

LEVI JULIAN WING, OF NEW YORK, N. Y.

CENTRIFUGAL FAN AND TURBINE-ENGINE.

No. 864,399.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Application filed September 20, 1905. Serial No. 279,269.

To all whom it may concern:

Be it known that I, LEVI JULIAN WING, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Centrifugal Fans and Turbine-Engines, of which the following is a specification.

The present invention relates generally to fans and has more particularly reference to a combined fan and turbine motor.

The chief object of the invention is to produce a structure combining a fan or air current producer and a turbine motor of such a character that the exhaust steam from the turbine will pass in a direction parallel to the axis of rotation of the fan and will mingle with the air current produced by the fan, so that the combined air and steam may be utilized for the purpose of a forced draft device for boilers &c.

To this end the invention comprises the features of construction, combination of parts and arrangement of elements hereinafter set forth.

In the drawings the invention is embodied in a concrete and preferred form, but changes of construction may of course be made without departing from the legitimate and intended scope of the invention.

In the said drawings: Figure 1 is an end elevation of a combined fan and turbine motor embodying the invention. Fig. 2 is a sectional view on the lines $x-x-x$ of Fig. 1. Fig. 3 is a diagrammatic view of one of the vanes and the adjacent nozzle for causing steam to impinge thereon. Fig. 4 is a vertical sectional view of a slightly different construction from that shown in Fig. 1. Fig. 5 is a detail view in elevation of a portion of Fig. 4. Fig. 6 is a plan view of Fig. 4 with parts broken away.

Similar characters of reference indicate corresponding parts in the several views.

A indicates a casing of a suitable construction having the cross arms 1 and 2 extending diametrically across the casing. These cross arms are provided with the lugs K and K' supporting the shaft 1. Upon this shaft is mounted the fan wheel B in the bearings L and L'. The fan wheel is provided with a series of vanes C hav-

ing buckets D at their periphery. In Figs. 1 to 3 the outer ends of the vanes form buckets the plane of whose impact surfaces is substantially parallel to the axis of rotation of the vanes as shown, while in Figs. 4 to 6 the buckets are shown as separate members.

At a convenient point is placed a supply pipe E for the steam provided with laterally extending pipes F and F' terminating in the nozzles J and J' set at a proper angle with relation to the buckets. When steam is supplied through the nozzles aforesaid, it will impinge on the impact surfaces of the buckets and will thereby cause the rotation of the fan. The steam after striking the buckets will then exhaust into the casing in a direction parallel to the axis of rotation of the fan, and will be taken up by the current of air created by the fan.

The reference characters H and G show the direction of the current of air.

In place of steam, compressed air or any other impelling fluid may be used. The claims should be construed accordingly.

What is claimed is:

1. In a fan, a casing, a plurality of rotatable vanes within said casing for creating a current of air parallel to the axis of rotation of the said vanes, buckets carried by said vanes at their periphery, and means for causing a jet of steam to impinge upon the buckets aforesaid, whereby the exhaust steam will flow in a direction parallel to the axis of rotation of the vanes and will be taken up by the current of air produced.

2. In a fan, a casing, a plurality of rotatable vanes within said casing for creating a current of air parallel to the axis of rotation of the vanes, buckets carried at the periphery of said vanes the plane of whose impact surfaces is substantially parallel to the axis of rotation of the said vanes, and means for causing a jet of steam to impinge upon the buckets aforesaid, whereby the exhaust steam will flow in a direction parallel to the axis of rotation of the vanes and will be taken up by the current of air produced.

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

LEVI JULIAN WING.

Witnesses:

D. D. LOVELACE,
G. S. MACDOWELL.