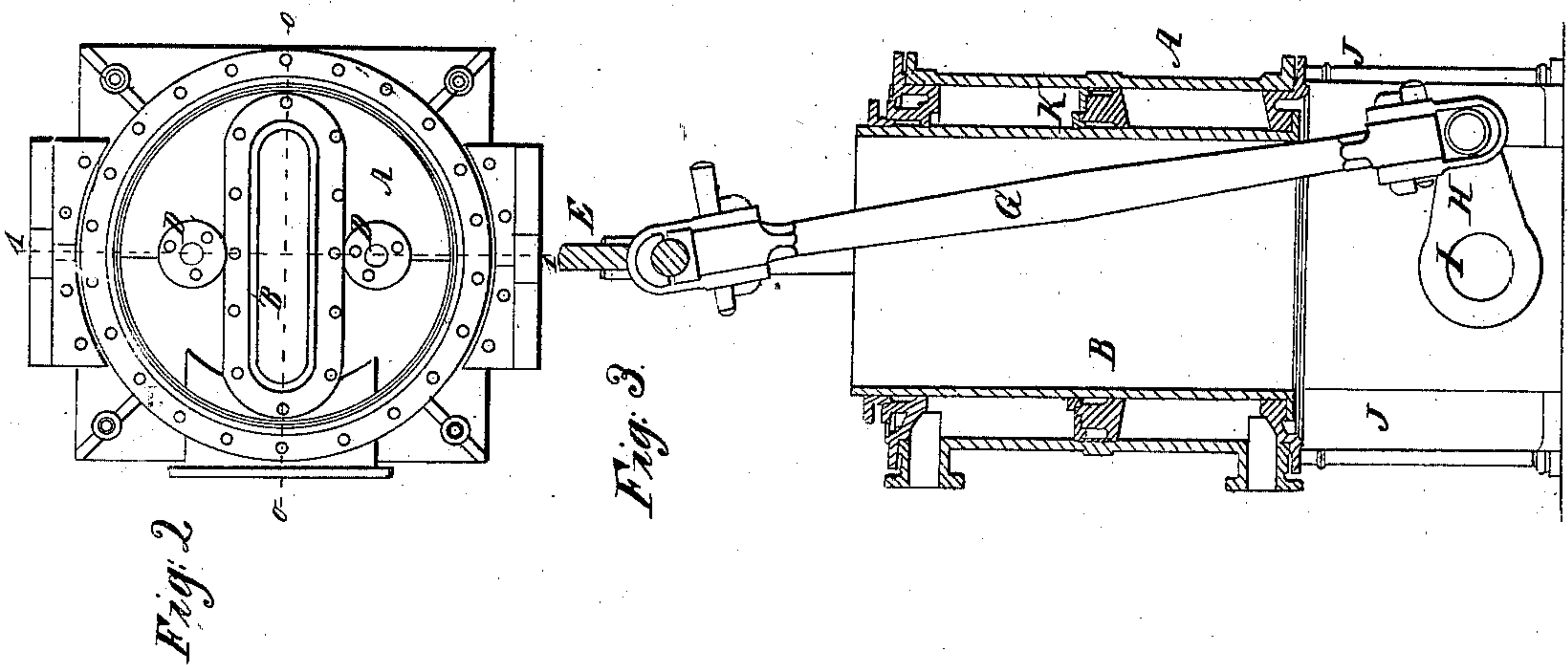
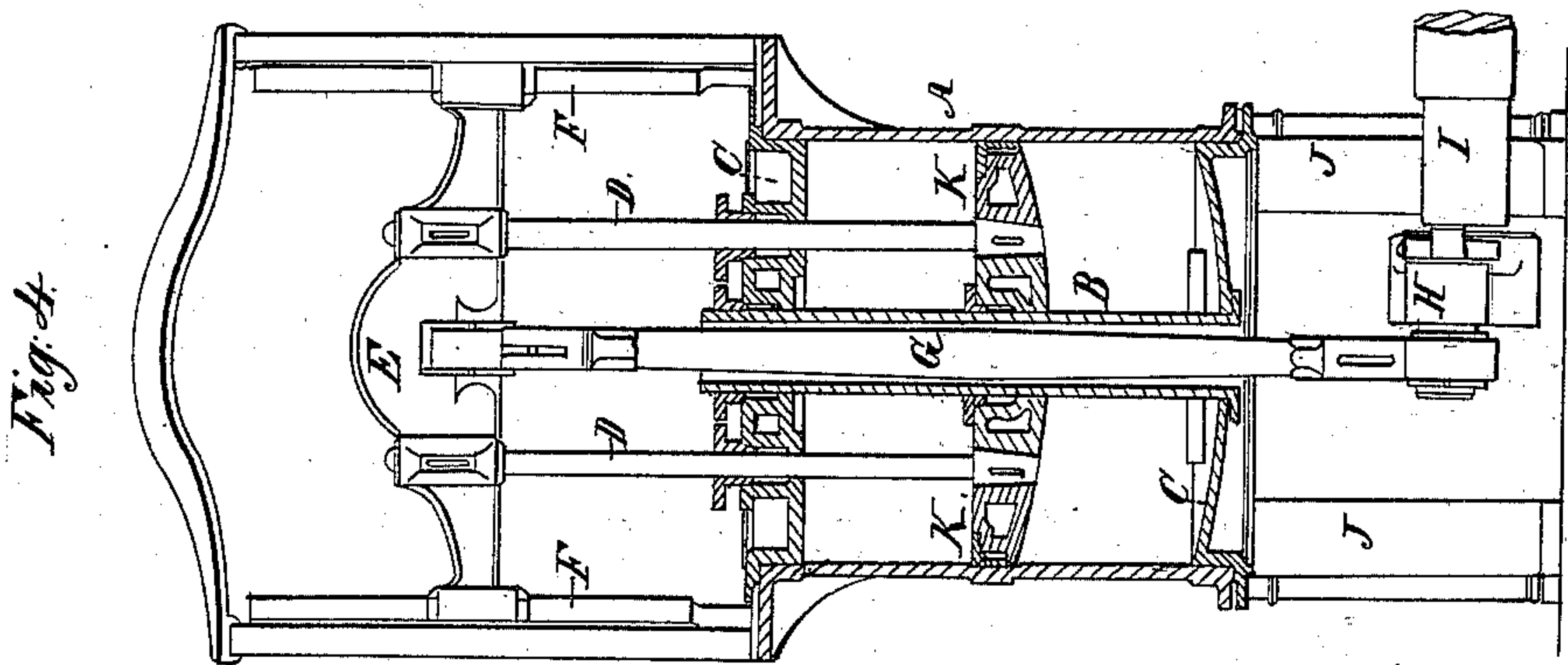
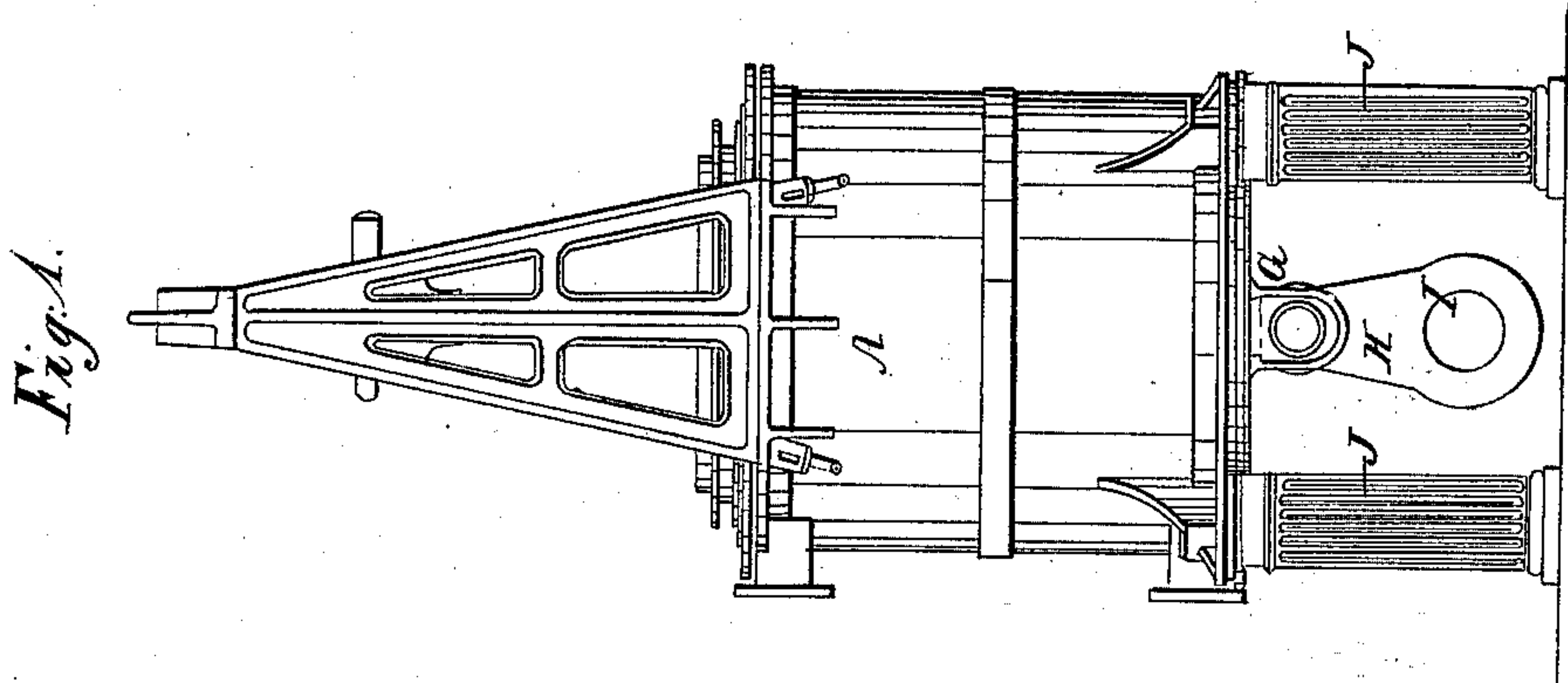


W. M. Ellis,
Reciprocating Steam Engine,
 No. 11,549, Patented Aug. 22, 1854.



UNITED STATES PATENT OFFICE.

WILLIAM M. ELLIS, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVED ARRANGEMENT OF THE STEAM-ENGINE.

Specification forming part of Letters Patent No. 11,549, dated August 22, 1854.

To all whom it may concern:

Be it known that I, WILLIAM M. ELLIS, of the city and county of Washington, in the District of Columbia, have invented a new and useful Improvement in Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, and which represent so much of an engine as is necessary to illustrate my improvement.

Figure 1 in the drawings represents a side elevation of the steam-cylinder, cross-head, guides, connecting-rod, crank, and supporting-pillars of a reciprocating engine having my improvements applied thereto. Fig. 2 represents a plan of the same with the connecting-rod, cross-head, and guide-frame removed. Fig. 3 represents a sectional elevation passing through the cylinder at the line 0 0 of Fig. 2, and Fig. 4 represents a similar view at the line 1 1 of Fig. 2.

My invention and improvement refer to the annular cylinder-engine; and it consists in arranging the cross-head and piston-rods at one end of the cylinder and the crank and main shaft at the other, while the connecting-rod passes through the central space within the annulus to connect the crank and cross-head. By this arrangement great compactness is insured without unduly shortening the connecting-rod.

One of the many forms of annular engines to which my invention is applicable is represented in the accompanying drawings, in which

A is the outer and B the inner shell, and C are the heads or ends of the annular cylinder. In this instance the transverse section of the outer shell is circular and that of the inner one oblong; but either of them may be made of any form that may be deemed most

expedient. The heads are in all cases of an annular form corresponding with that of the annular space between the inner and outer shells of the cylinder. The piston K is also of an annular form corresponding to that of the cylinder, in these particulars being the same as other annular engines.

D are the piston-rods; E, the cross head, which slides between guides F; G, the connecting-rod, which links the cross-head and crank together. It works in the space within the annulus, passing through the cylinder and piston.

H is the crank; I, the main driving-shaft, and J the pillars on which the cylinder is supported.

The several members of the engine may be made in the usual or in any convenient manner; but as my invention is confined to the arrangement of the parts and has nothing to do with their construction, to describe the latter in detail would involve unnecessary prolixity.

This engine may be placed in an inclined or horizontal position, or it may be inverted, as may be found convenient, as it will work in any position.

What I claim in the foregoing as my invention, and desire to secure by Letters Patent, is—

The arrangement of the annular cylinder and piston between the crank and cross-head, and uniting the two latter by a connecting-rod passing through the space within the two former, as herein set forth.

In testimony whereof I have hereunto subscribed my name.

WM. M. ELLIS.

Witnesses:

MICHAEL ROBB,
JAS. CRANDELL.