

(No Model.)

2 Sheets—Sheet 1.

J. CURTIS.
STEAM ENGINE.

No. 333,060.

Patented Dec. 22, 1885.

Fig. 1.

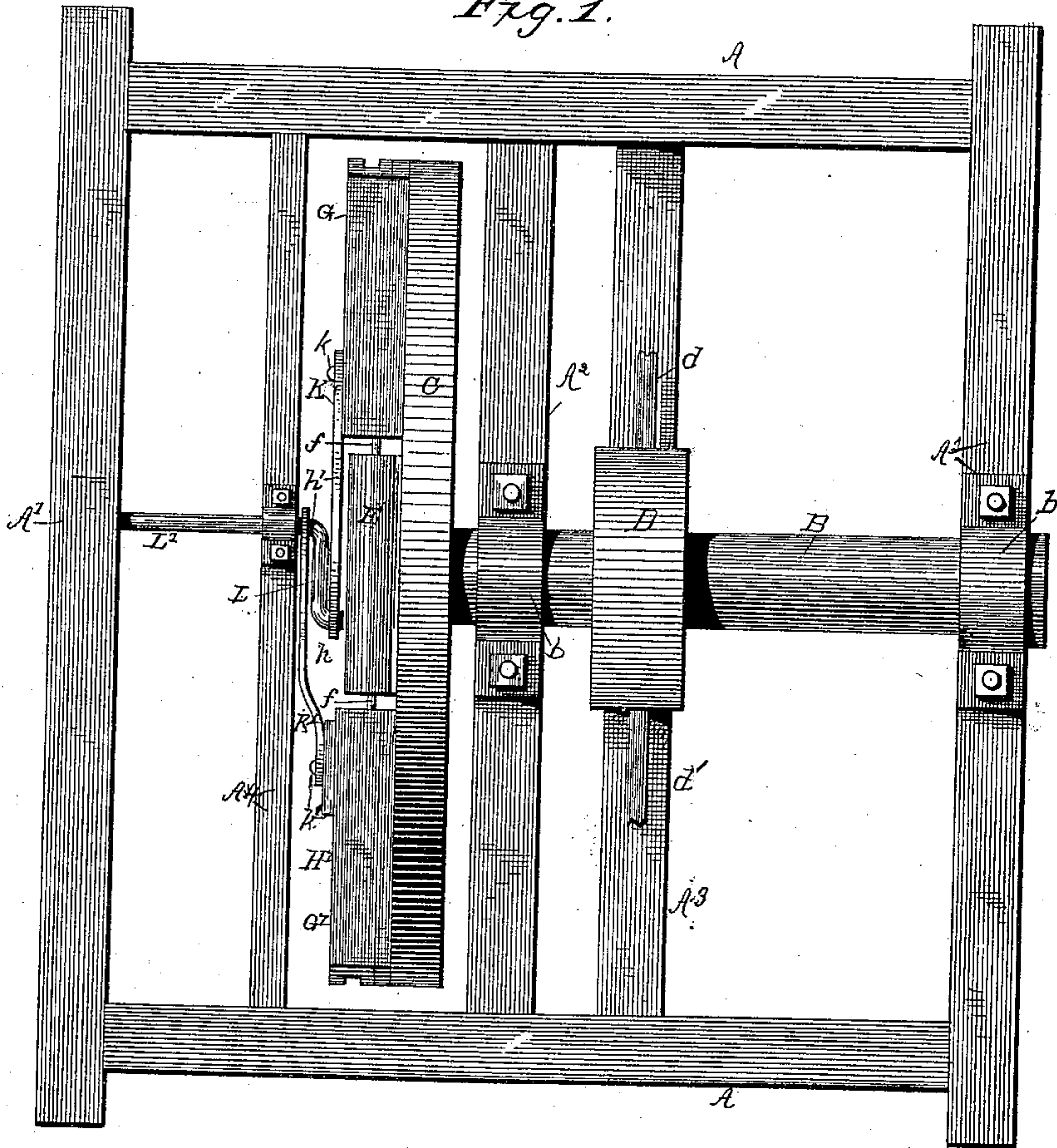
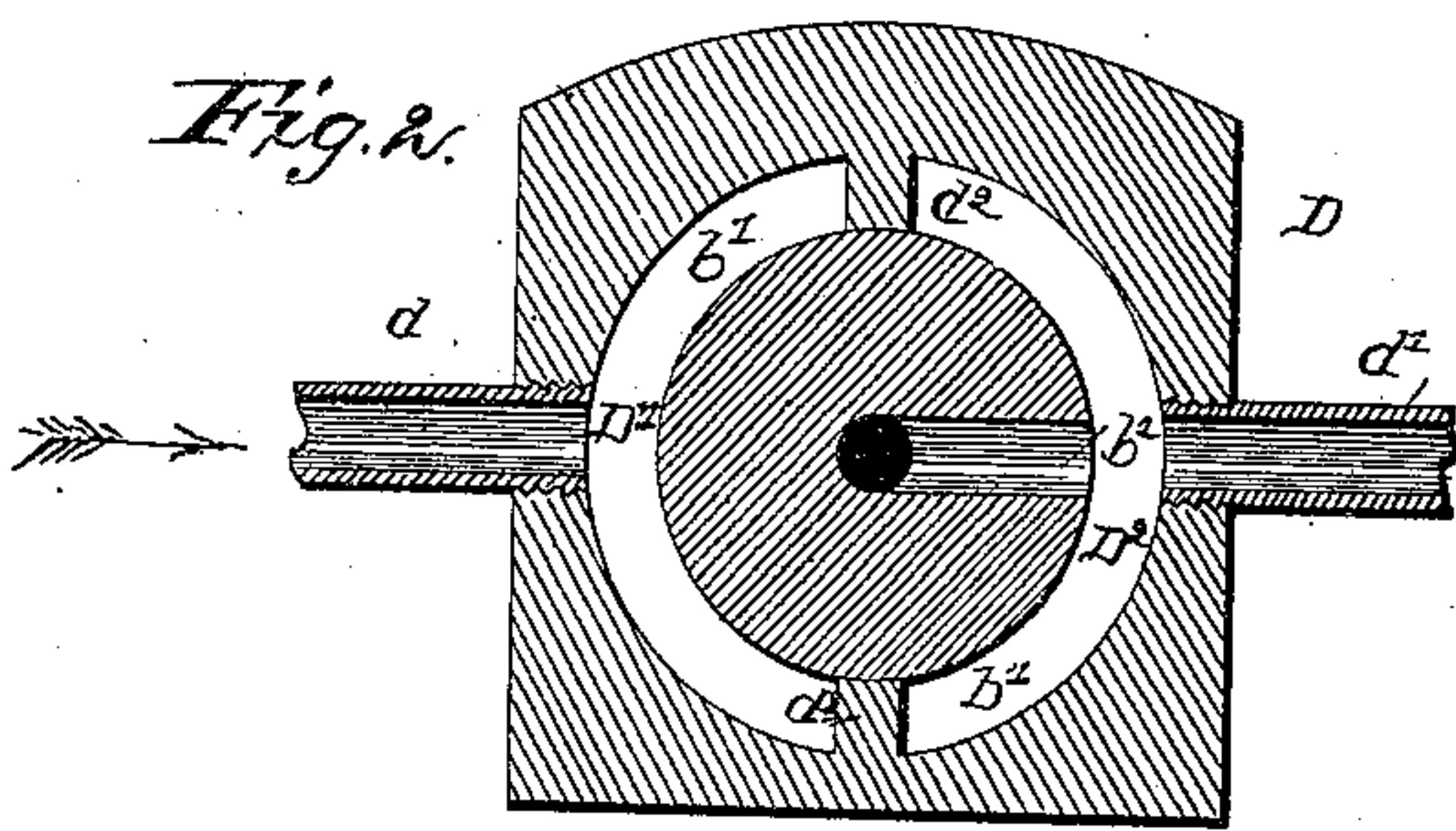


Fig. 2.



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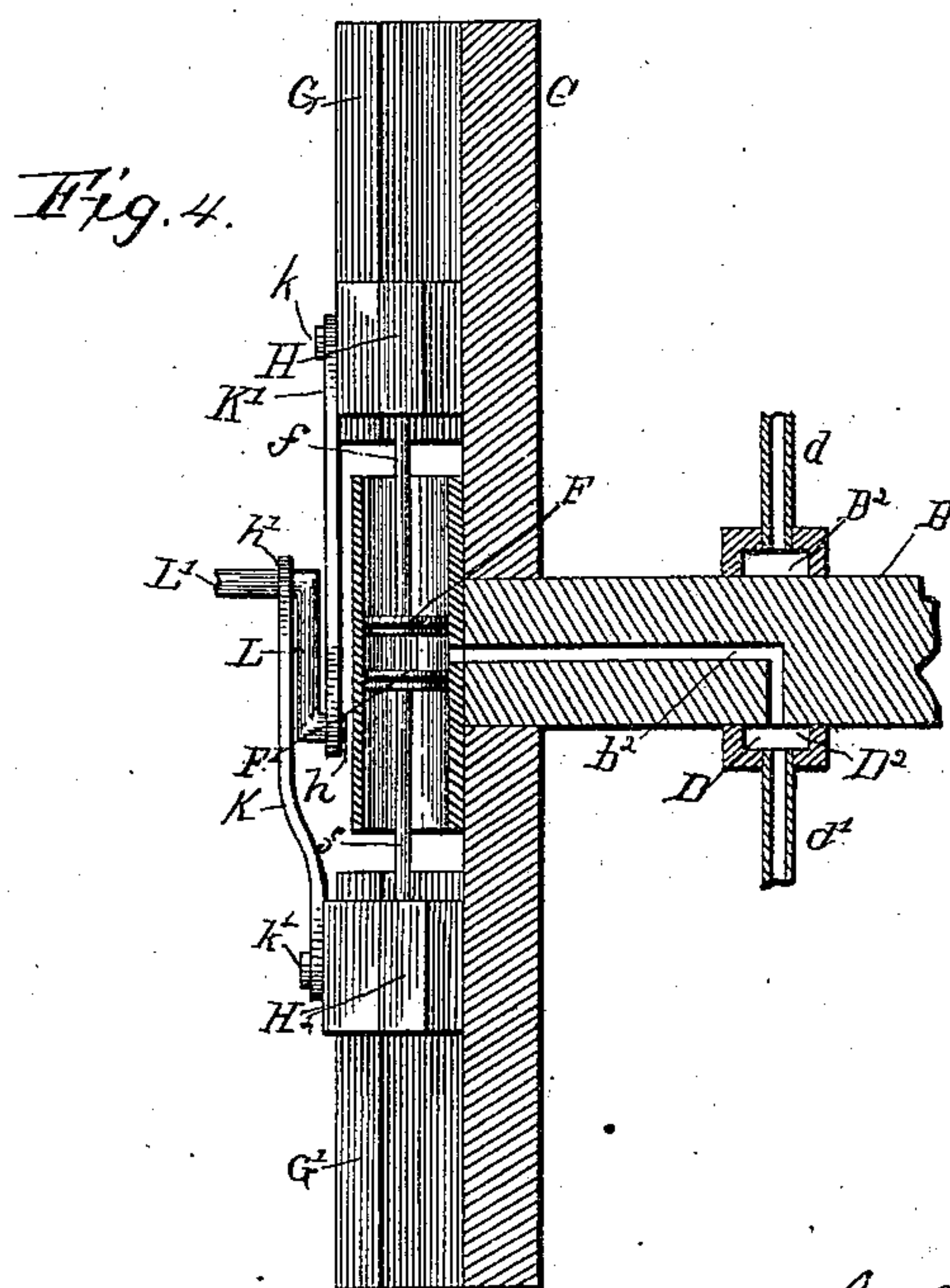
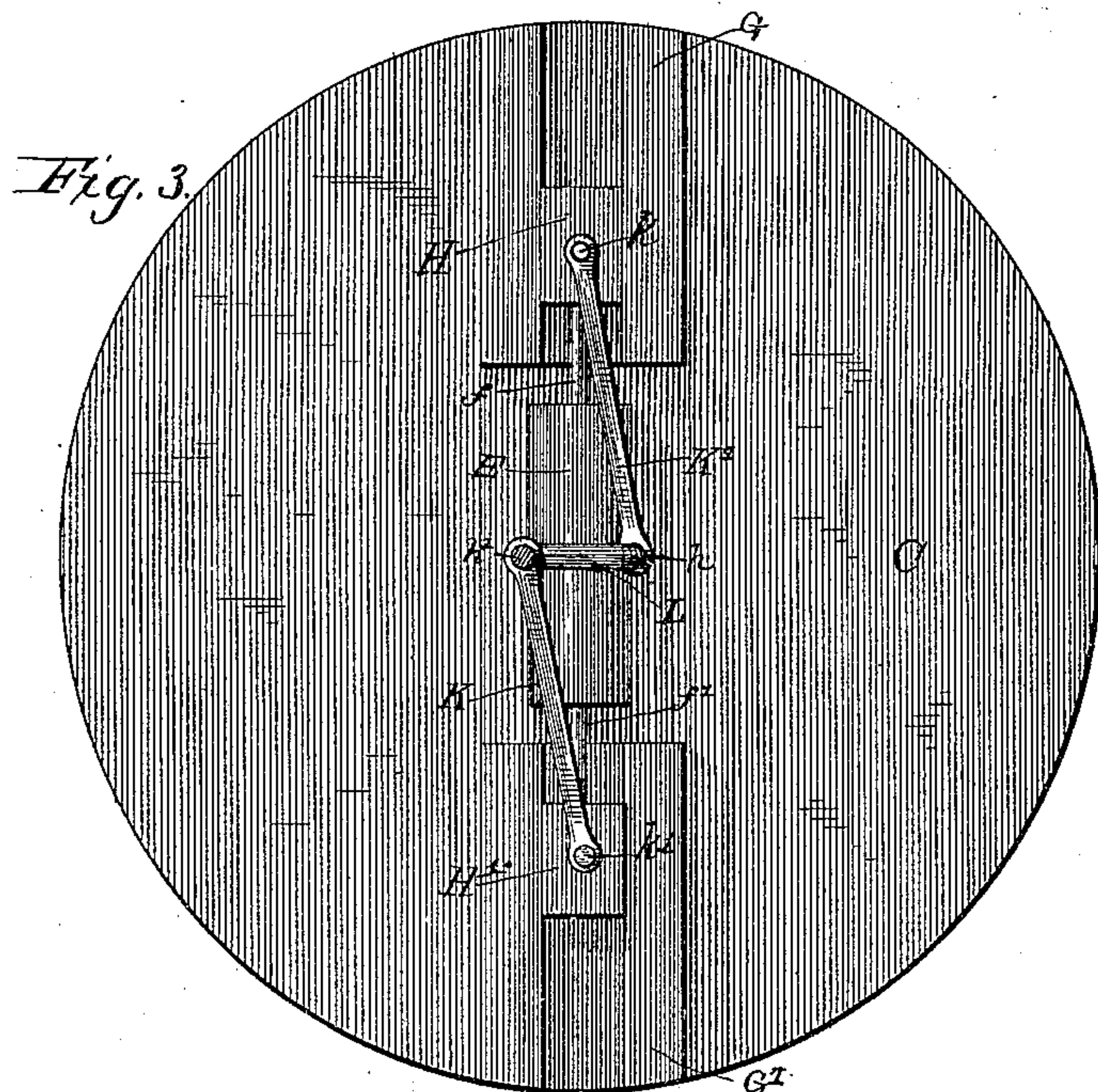
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UNITED STATES PATENT OFFICE.

JOHN CURTIS, OF NORTH DORSET, VERMONT.

STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 333,060, dated December 22, 1885.

Application filed October 5, 1885. Serial No. 179,009. (No model.)

To all whom it may concern:

Be it known that I, JOHN CURTIS, a citizen of the United States, residing at North Dorset, in the county of Bennington and State of Vermont, have invented certain new and useful Improvements in Steam-Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to that class of steam-engines ordinarily known as revolving-cylinder engines; and it consists in certain novel features of construction and arrangement, which will be hereinafter fully explained and specifically claimed.

Figure 1 is a plan view of a revolving-cylinder engine embodying the features of my improvement. Fig. 2 is a transverse vertical sectional representation of the steam-box and hollow shaft, showing the interior construction and arrangement thereof. Fig. 3 is a representation of the revolving disk, provided with the cylinder and its connecting parts, and showing their relative arrangement to each other. Fig. 4 is a longitudinal sectional representation of the shaft, the disk, the cylinder, and its connecting parts, more fully illustrating the construction and relation of the same.

Similar letters of reference denote the same parts in the different views.

A A' A² A³ A⁴ is the supporting-frame.

B is the shaft, having bearings in the supporting-frame parts, A' A², to which it is secured by journal-caps *b b*.

D is the steam-box, surrounding the shaft B, which is provided with semicircular recesses *b'*, which act as steam inlet and exhaust port, as hereinafter explained.

C is a disk or balance-wheel suitably secured to the shaft B.

E is the cylinder, provided with two pistons, F F', as fully shown in Fig. 4, connecting, by means of piston-rods *f f'*, with cross-heads H H'.

G G' are the slides, which may be made integral with or suitably secured to the disk C.

L is an arm rigidly secured by a rectangular extension, L', to the frame parts A' A⁴. The arm L is provided with wrists *h h'*, the distance between which is equal to the stroke

of the pistons F F'. The position of the arm L is such as to equally divide the distance between the wrists *h h'* by the center of the disk C and shaft B, and to be in line with the engine's transverse horizontal center. K K' are rods pivotally connected to the cross-heads H H' by means of wrists *k k'*, and to the wrists *h h'* of the arm L. The interior of the steam-box D is divided by partitions *d² d²* into a semicircular receiving-chamber, D', provided with an induction-pipe *d*, and a semicircular eduction-chamber, D², having an exhaust-pipe, *d'*. The steam will enter the cylinder through the port *b'* of the shaft B, between the pistons F F', and start the engine in motion, when rods K K', connecting the cross-heads H H' with the arm L, will cause both pistons to move with equal time and distance and the disk C and shaft B to turn. As the port *b'* passes the partition *d²* of the steam-chest, the steam will be cut off, and the steam admitted into the engine will cause it to make one half of a revolution, which will be completed by the momentum of the disk C, when steam will again enter the cylinder as before, and the motion will thus be maintained.

By reason of the slides G G' and cross-heads H H' on opposite sides of the disk C the motion of the latter will be balanced, and the action known as "pounding," that would otherwise accrue, thus avoided. As the shaft revolves and the induction-port *b'* passes the partition *d²* of the steam-box D, the induction-port *b'* will act as an exhaust from the cylinder into the chamber D², from whence the steam will issue through the pipe *d'*, and the engine will take steam while the port *b'* is moving between the partitions *d² d²* on the steam-box side D'. By increasing the thickness of the partitions *d² d²* of the steam-box, or by setting them to one side or the other of the vertical center of the shaft B, the engine can be made to cut off or begin to exhaust the steam at any desired part of the stroke.

Having explained the construction and operation of my improvement, what I claim as new, and desire to secure by Letters Patent, is—

1. The shaft B, having port *b'*, and the

steam-box D, having partitions d^2 d^2 , in combination with the disk C and cylinder E, having pistons F F', arranged to operate as specified, for the purpose set forth.

- 5 2. The rods K K', connected to and arranged to operate on the fixed arm L, in combination with the cross-heads G G', as and for the purpose set forth,

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

JOHN CURTIS.

Witnesses:

A. L. GRAVES.

I. B. WILSON.