J. BRANDON & A. W. TRANKLE.

Valve-Motions for Reciprocating Steam-Engines.

No. 156,907. Patented Nov. 17, 1874.

Fig. 1

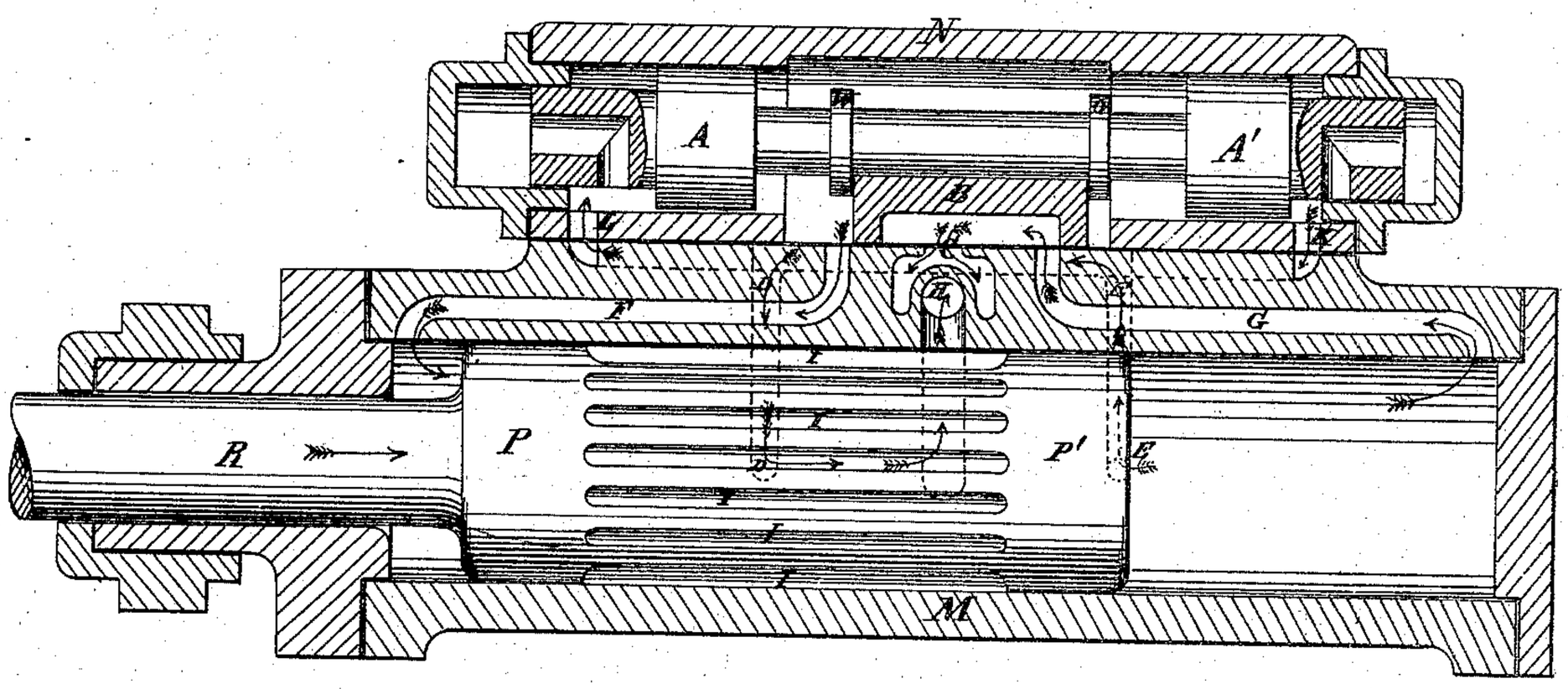
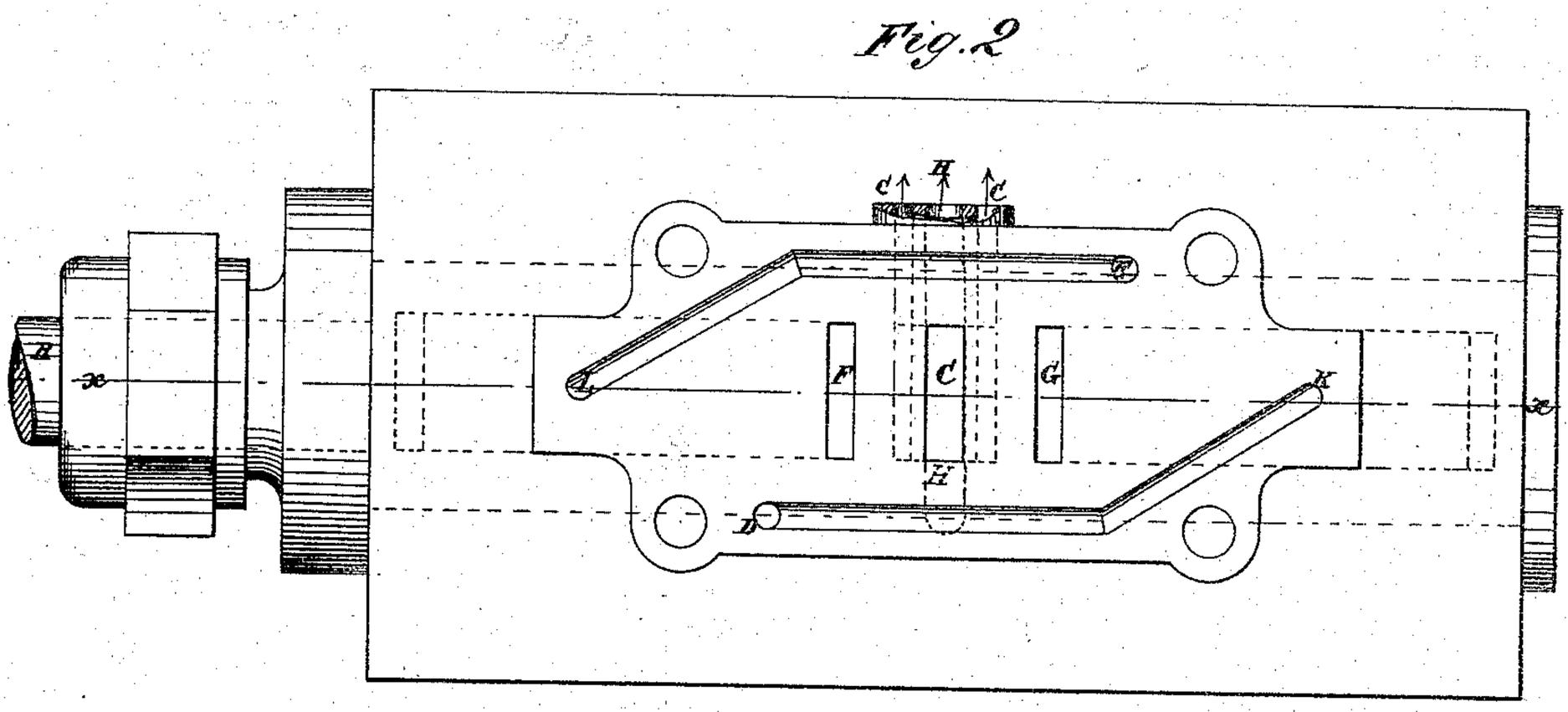


Fig. 2



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UNITED STATES PATENT OFFICE.

JAMES BRANDON AND ALBERT W. TRANKLE, OF NEW YORK, N. Y.

IMPROVEMENT IN VALVE-MOTIONS FOR RECIPROCATING STEAM-ENGINES.

Specification forming part of Letters Patent No. **156,907**, dated November 17, 1874; application filed July 18, 1874.

To all whom it may concern:

Be it known that we, JAMES BRANDON and ALBERT W. TRANKLE, of the city, county, and State of New York, have invented a new and useful Improvement in Valve-Motion for Reciprocating Steam-Engines, of which the following is a specification:

The invention will first be fully described, and then pointed out in the claim.

In the accompanying drawing, Figure 1 is a longitudinal vertical section of Fig. 2 taken on the line *x x*. Fig. 2 is a plan view of the main cylinder with the valve-chest removed, showing the steam-passages and valve-ports of the engine.

Similar letters of reference indicate corresponding parts.

M is the cylinder, having steam-passages F and G, exhaust-passage C, and valve B, as in ordinary engines. N is the steam-chest, which is accurately bored out, having two pistons, A and A′, accurately fitted to the same. W and O are two collars on the rod which connects the two pistons A A′, which form a yoke for the slide-valve B. D is a passage which communicates with the interior of the main cylinder. At the right hand this passage communicates with the small cylinder at K. E is a passage communicating with the main cylinder and with the left-hand end of the small cylinder at L. I is one of a number of grooves cut in the main piston between the parts marked P P′. The number of these grooves is such that one or more will always be in communication with the passages D or E, corresponding with the end of the stroke at which the piston P P′ may be. H is a passage communicating with the interior of the main cylinder, and terminating in an annulus or ring opening in middle of the exhaust C. With the parts in the position shown in the drawing, steam is admitted into the steam-chest N, and will pass through the passage F, and force the piston P P′ from left to right, until the part P passes the passage D, and then the steam will pass through D to K, and force the valve-pistons A A′ from right to left, carrying with it the slide-valve B. Before piston A A′ moves from right to left, the left-hand end of the small cylinder at L is full of steam, which has a tendency to resist the movement of the piston in that direction. Now, the way we provide for the escape of this steam is through the passage L E and groove I in the main piston, to passage H. The slide-valve B will open the passage G, communicating with the steam-chest, and also open the passage F with the exhaust C. The passage H terminates in an annulus in the center of the exhaust C, as before stated. Now, the high tension of the exhaust steam will induce a draft or current through H, which will assist the exhausting of the steam from either end of the pistons A A′. When this is effected the parts will be in a position to move from right to left in a similar manner. The course of the steam through the various passages described is indicated by arrows.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

The combination, with cylinder M, having annular exhaust C, fluted piston P P′, passages D E, and exhaust-pipe H, of the steam-chest N, having passages K L, pistons A A′ on the same stem, and steam-chambers in the rear of said pistons, as shown and described, so that a current may be superinduced through passage H, to assist in the exhaust of steam from the ends of the steam-chest pistons.

JAMES BRANDON.
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Witnesses:
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