

J. R. MAXWELL & EZRA COPE.

Improvement in Steam Engines.

No. 123,635. Patented Feb. 13, 1872.

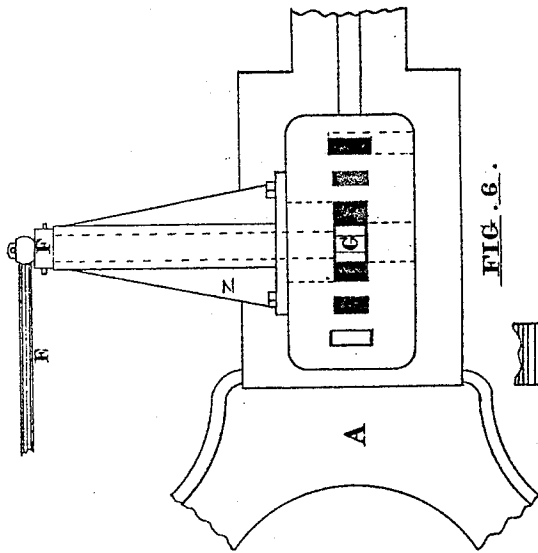


FIG. 6.

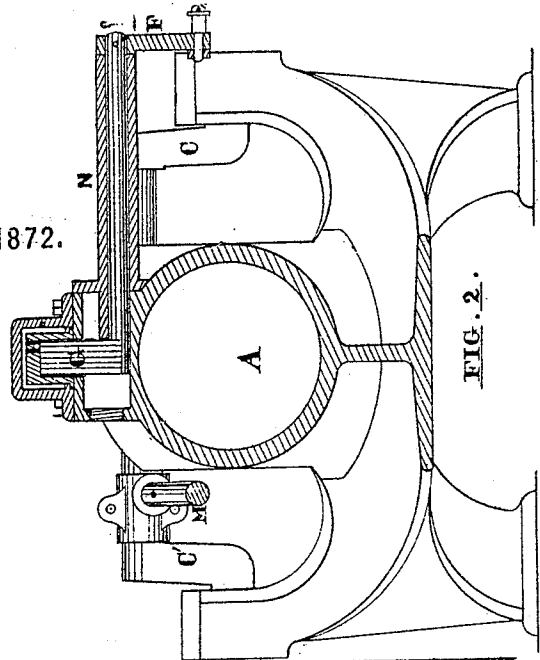


FIG. 2.

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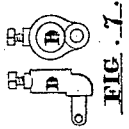


FIG. 7.

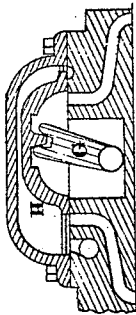


FIG. 5.

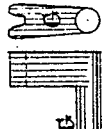


FIG. 4.

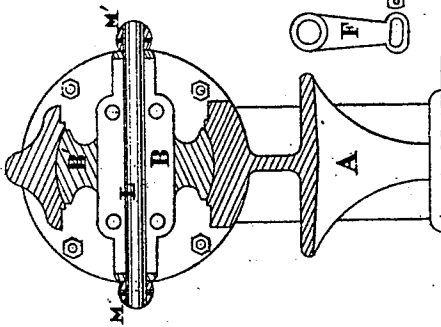


FIG. 3.

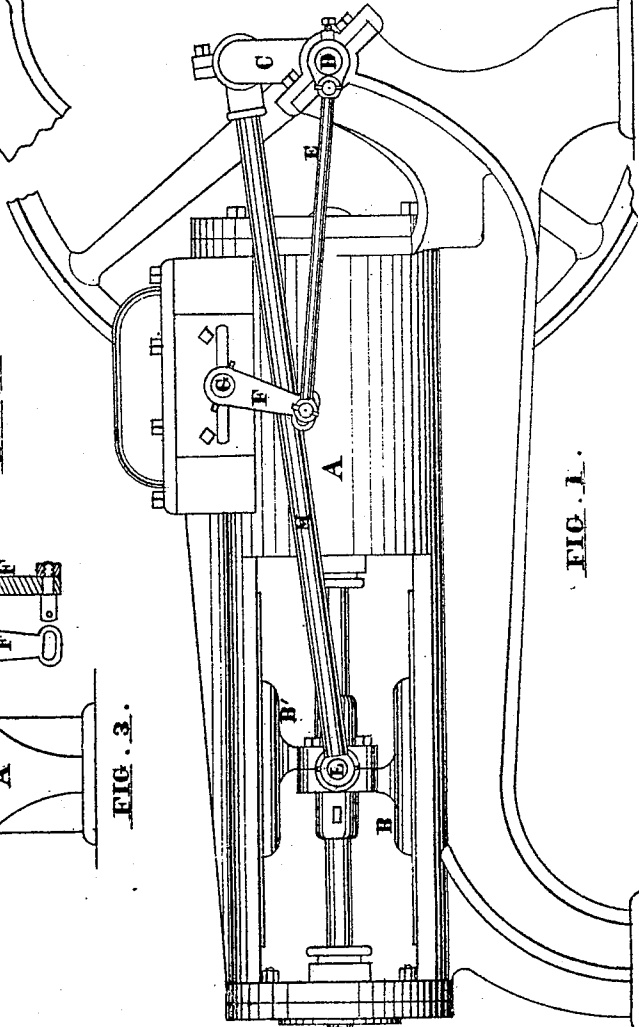


FIG. 1.

Witnesses.

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UNITED STATES PATENT OFFICE

JAMES R. MAXWELL, OF CINCINNATI, OHIO, AND EZRA COPE, OF COVINGTON, KENTUCKY.

IMPROVEMENT IN STEAM-ENGINES.

Specification forming part of Letters Patent No. 123,635, dated February 13, 1872.

To all whom it may concern:

Be it known that we, JAMES R. MAXWELL, of Cincinnati, in the county of Hamilton and the State of Ohio, and EZRA COPE, of Covington, in the county of Kenton and State of Kentucky, have invented a new and useful improvement in Steam-Engines.

The nature of our invention consists in the manner of constructing, combining, and arranging the parts of a steam-engine.

To enable others skilled in the art to make and use our invention, we proceed to describe our invention; and hereby declare the following specification, together with the accompanying drawing with like figures thereon referring to like parts making part of these specifications, a full and exact description of the same.

In Figure 1, A represents a steam-cylinder cast in one piece with its bed, affording two crank-shaft bearings at one end and a combined connecting piece and cross-head guides at the opposite end. Customary steam and exhaust ports and passages of a slide-valve engine are formed in and lead from a raised valve-seat cast at the same time on the steam-cylinder. The inner cylinder-head with its stuffing-box is fitted and secured within the steam-cylinder. The other cylinder-head is secured in the usual manner to the opposite end of the steam-cylinder. B and B' represent a cross-head formed in two sections. As requisite to insert and adjust the cross-head, when fitted to be bolted together between the guide-ways, each section of the cross-head is a counterpart of and substitute for the other, and has one slide and one socket-hub or piston-rod boss. The cross-head is bored out transversely to receive the journal L.

In Fig. 3, B and B' represent the cross-head in transverse section, with the journal L neatly fitted therein to have a motion in its bearing when the connecting-rods M and M' are secured on the protruding ends of the journal L by pins or otherwise, and connected up in operative condition. The cross-head is turned

off to conform to the guide-ways, which are fitted for the cross-head by boring at one setting to bore the steam-cylinder.

Fig. 5 represents the valve-seat raised to admit the play of the indented finger G within the enlarged exhaust-passage, and to engage with and throw the valve H within the steam-chest.

In Figs. 2 and 6, N represents a sleeve bolted to the side of the exhaust-passage to form a bearing for the rocker-shaft, as shown in Figs. 2, 4, and 6. The indented finger G is preferably formed on one end of the rocker-shaft. On the opposite end of the rocker-shaft is secured the arm F, with a curved slot to serve in adjustments of the valve-gear.

In Figs. 1 and 2, C and C' represent a crank-shaft sustained in two bearings, and having two journals for the main connecting-rods M and M' between the two bearings, with a balance-wheel on one end and an eccentric crank on the opposite end to impart proper motion through the connecting-rod E to the valve H when all the parts are connected up and adjusted ready for the admission of steam into the steam-chest in the usual manner, and thus initiate the movement of the relating parts as combined and arranged to successful operation for the varied uses and purposes of such enginery, but more especially suited as a motor for any piston or plunger-pump bolted to the flanged end of the connecting piece, with the piston-rod of the pump attached to the cross-head.

Having thus fully described the manner of making and using our invention, what we desire to claim, and secure by Letters Patent, is—

1. We claim the cross-head of a steam-engine, when constructed, as shown, of two pieces bolted together, each piece provided with one slide, one hub or piston-rod boss, and part of the bearing for the pitman-journal, all formed in the casting for the purpose as described.

2. The arrangement of the cross-head

guides fixed asunder in the casting, the cross-head B B', a piston-rod attached at either or each side thereof in line with the hubs, the connecting-rods M and M', and the main shaft C with the balance-wheel thereon, all constructed and operating substantially as shown and described.

3. We also claim the slide-valve H, in combination with the sleeve N and finger G, the

arm F, connecting-rod E, and the eccentric or crank D on the shaft C, all constructed and operating substantially as shown and described, for the purpose herein set forth.

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EZRA COPE.

Witnesses:

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