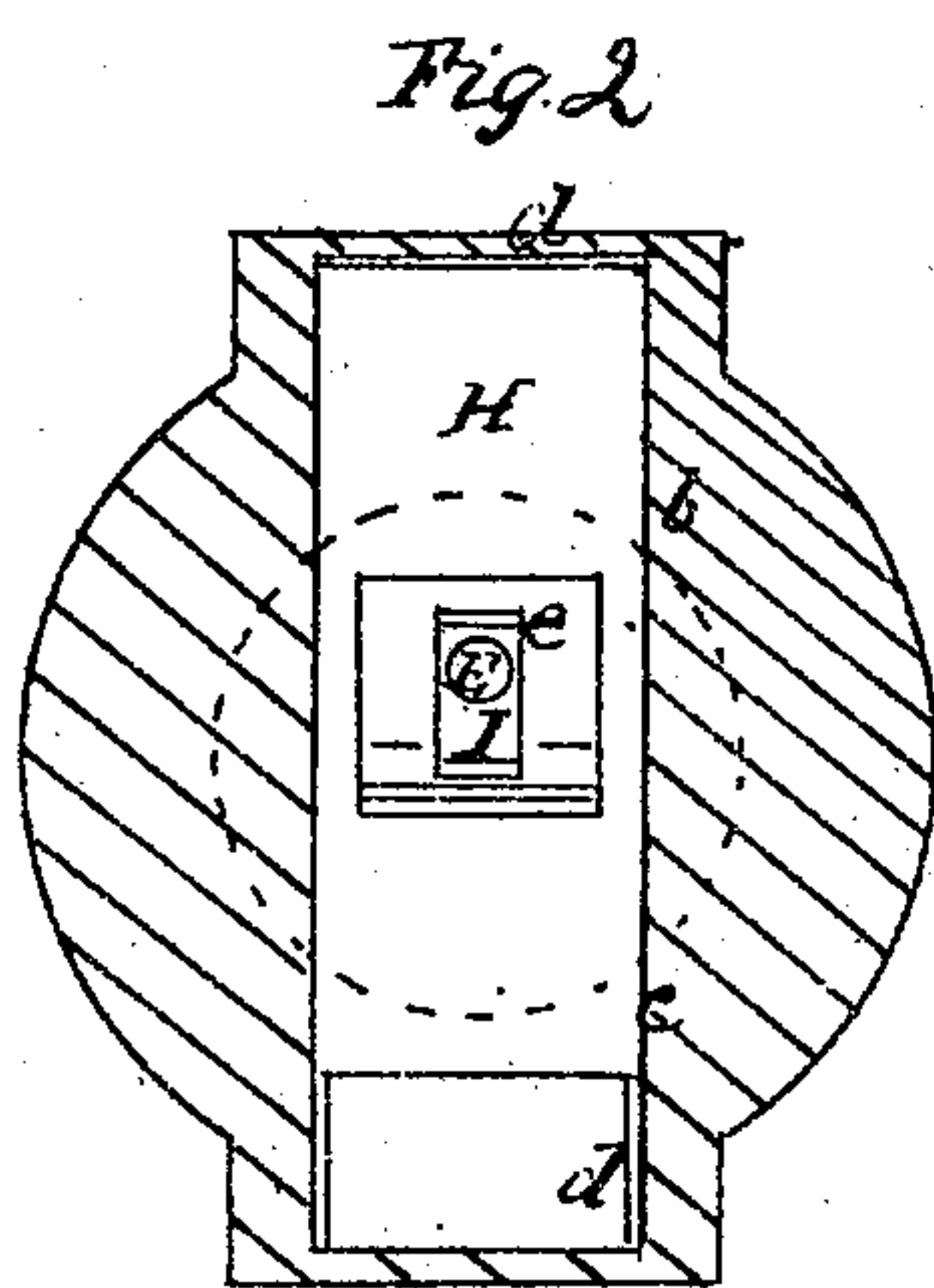
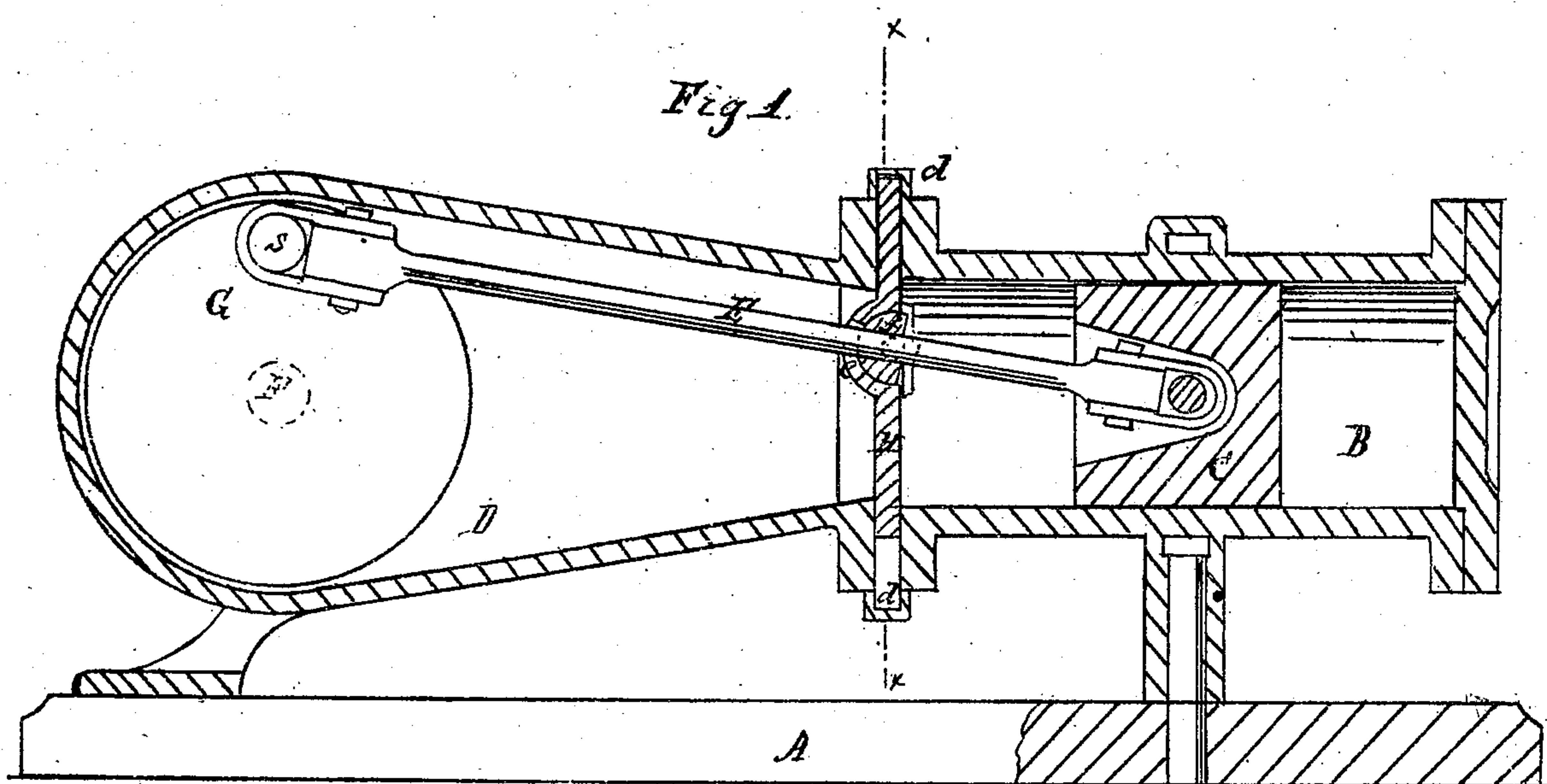


H. Bailey.
Steam-Engine.

N^o 73489

Patented Jan. 21, 1868.



Witnesses.

A. Le Clerc
J. M. Coombs

Inventor.

Henry Bailey

United States Patent Office.

HENRY BAILEY, OF NEW YORK, N. Y., ASSIGNOR TO I. L. ROMER, H. F. PEASE, AND W. R. PEASE.

Letters Patent No. 73,489, dated January 21, 1868.

IMPROVEMENT IN STEAM-ENGINES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, HENRY BAILEY, of the city, county, and State of New York, have invented a new and useful Improvement in Steam-Engines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a longitudinal section of a steam-engine, in part constructed according to my improvement, and

Figure 2 a transverse section, taken as indicated by the line *x x* in fig. 1.

Similar letters of reference indicate corresponding parts.

This improvement has reference, more particularly, to that description of engines in which a revolving crank, with its operating pitman, is enclosed within a steam or water-tight head, arranged to form an extension, as it were, from the one end of the cylinder, in which the piston, to which the pitman is directly pivoted, works, as secured by Letters Patent, (No. 62,920,) issued March 19, 1867; and my invention consists, in combination with such an arrangement, in giving a close, or comparatively close, character to the end of the cylinder that connects with the hollow head, as referred to, by providing the same with a dividing piece, fitted with a loose or free transverse slide, having a rocking joint-piece or block, through which the pitman passes, and the action of which, combined with the transverse motion of the slide, provides for the play of the pitman in a comparatively close manner through it, said slide forming a division, as it were, between the cylinder and head, which, combined, enclose the crank, pitman, and piston.

Referring to the accompanying drawing, which represents the invention as applied to a horizontal steam-engine, A is the bed-plate of the engine, and B its cylinder, which may be fitted with any suitable valve for admitting steam to and exhausting it from alternately opposite ends, to reciprocate a piston, C. Connected, as an extension-box or chamber, with the forward end of the cylinder, is the steam or water-tight head D, preferably of a shape corresponding to the travel of the pitman E, and within which the main shaft F projects, and carries, inside of said head, a crank or disk, G, provided with a wrist-pin, *s*, to which the pitman E is attached, at its outer end, its inner end being pivoted to the piston C, preferably within the body of the latter.

Such an arrangement of parts not only dispenses with a piston-rod, but forms a steady-working and compact form of engine, with piston, pitman, and crank alike concealed from view and injury. It, however, is open to the objection, where the forward end of the cylinder B is in uninterrupted communication with the steam-head D, of a certain loss or waste of steam, when exhausting from the end with which the head connects, by steam contained therein also passing off with the steam from the cylinder.

To obviate this, and yet retain the same arrangement of parts, in all essential respects, I close, or rather partly close, the forward end of the cylinder, or end of the head D, against which it abuts, still making said head a steam or water-tight box-shaped extension to such cylinder-end, and provide the division, *b*, so formed between the interior of the cylinder and head, with a loose or free slide, H, having a traverse, transversely to the motion of the piston, and covering an oblong slot or opening, *c*, made in the division *b*, also working at its ends in pockets or chambers *d*, so as to enclose the same in common with the other working parts. This slide H has an opening, *e*, made through it, for the play and passage of the pitman, which opening is covered by a rocking joint-piece or block, I, pivoted, as at *f*, to the slide, and of curved form on its face, to fit a correspondingly-shaped seat in the slide, the pitman, which is preferably made round, working in a close but free manner through the block or joint-piece I. By the combined action of the slide H and rocking block I, the pitman E has free passage and swing or play, in a sufficiently steam-tight manner, without the aid of a stuffing-box; but, inasmuch as the head D forms a steam or water-tight enclosure to, or extension of, the forward cylinder-end, as it were, it is by no means necessary that the slide H should be otherwise than a good working fit, and packing to it may, if desired, be dispensed with, so that the free swing and play of the pitman will in nowise, or at least not materially, be interfered with by it.

The invention may also be applied to work as or in connection with a pump, by making the shaft F the driver to the piston, and providing the cylinder with suitable valves and suction and discharge-pipes.

What is here claimed, and desired to be secured by Letters Patent, is—

The combination, with the cylinder B and head D, for enclosed operation within them of the piston, pitman, and crank, as described, of the interposed slide H, with its rocking joint-piece or block I, all for action together, essentially as herein set forth.

HENRY BAILEY.

Witnesses:

A. LE CLERC,

J. W. COOMES.