

H. T. JENNINGS & THOMAS JENNINGS.

Improvement in Steam Engines.

No. 118,857.

Patented Sep. 12, 1871.

Fig. 1.

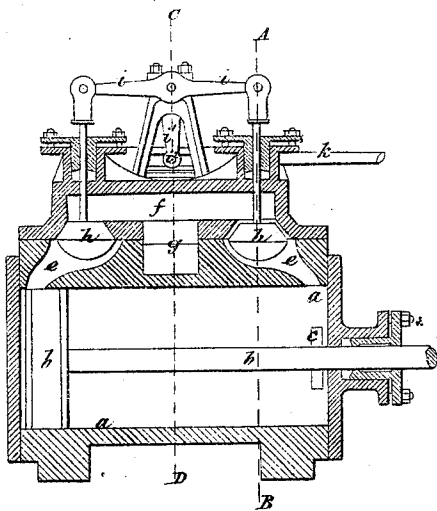


Fig. 2.

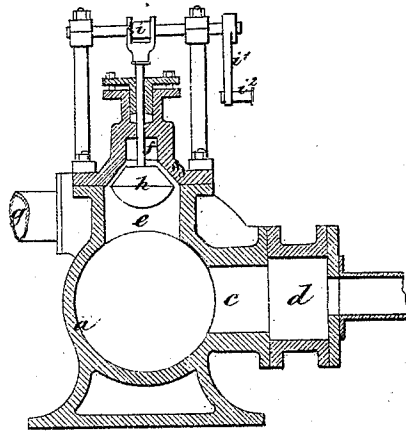
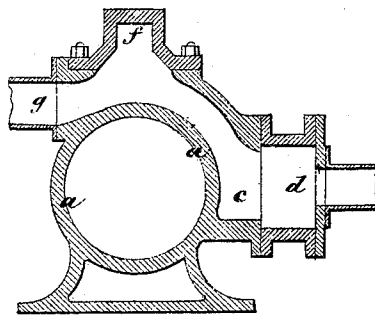


Fig. 3.



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HERBERT THOMAS JENNINGS AND THOMAS JENNINGS, OF No. 20 SYDNEY STREET, CITY ROAD, ENGLAND.

IMPROVEMENT IN STEAM-ENGINES.

Specification forming part of Letters Patent No. 118,857, dated September 12, 1871.

To all whom it may concern:

Be it known that we, HERBERT THOMAS JENNINGS and THOMAS JENNINGS, both of 20 Sydney street, City Road, in the county of Middlesex, England, subjects of the Queen of Great Britain, have invented or discovered new and useful Improvements in Steam-Engines; and we, the said HERBERT THOMAS JENNINGS and THOMAS JENNINGS, do hereby declare the nature of the said invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof—that is to say:

This invention has for its object to construct steam-engines in such manner as to afford a free escape for the steam from the cylinder of the engine after it has done its work therein, in order that there may be no back pressure upon the piston. For this purpose, in addition to forming the cylinder with two passages leading into it, one at each of its ends, through which steam is alternately admitted to and allowed to escape from the ends of the cylinder by means of a slide-valve worked by an eccentric, as heretofore usual, we also form a second or supplementary opening at each end of the cylinder, which opening or passage is only employed for allowing steam to escape from the cylinder. The opening and closing of these supplementary passages we effect by means of valves, worked, by preference, by tappets on an eccentric rod, independently after main valve or valves, so that as the piston is moving toward one end of the cylinder not only will the ordinary exhaust-passage be open to allow steam to escape from the end of the cylinder, but, in addition, there will be a second outlet for the steam, and this second outlet will be kept full open until the piston has all but completed its stroke. The valve governing the opening and closing of the supplementary or additional exhaust-outlets, being independent of the main valve, is then suddenly shifted so that this outlet is closed and the supplementary exhaust-outlet from the opposite end of the cylinder is, at the same time, opened. The cylinders of condensing-engines may similarly be filled with two exhaust-passages. In place of employing cone-valves to regulate the opening and closing of the supplementary or additional outlet-passages oth-

er forms of valve may be employed, and they may be opened or closed by any suitable arrangement of mechanism.

And in order that our said invention may be fully understood and readily carried into effect, we have, in the drawing hereunto annexed, shown the cylinder of a steam-engine thus fitted with additional outlet or exhaust-passages.

Figure 1 is a longitudinal section, and Figs. 2 and 3 are transverse sections taken at the lines A B and C D in Fig. 1, respectively.

a is the cylinder; *b*, its piston and rod; and *c*, the ordinary steam inlet-and-outlet passages at the ends of the cylinder. These passages lead into the steam-chest *d*, in which the ordinary slide-valve works. This valve is not shown in the drawing. *ee* are the supplementary or additional outlet or exhaust-passages. They lead into a valve-box, *f*, which is in communication with the main exhaust-passage *g* from the slide-valve. *h* are cone-valves seated in the bottom of the valve-box *f* and controlling the passage of steam into it. These valves are connected together, their stems, which work through stuffing-boxes, both being jointed to the rocking-lever *i*. The pin-holes in the rocking-lever are slightly elongated. The rocking-lever *i* has an arm, *i*¹, with a pin, *i*², at its end, entering a slot in the end of the eccentric rod *k* for working the valves *h*. In this slot adjustable stops are fixed, and these, by coming against the pin *i*² of the rocking-lever, give motion to this lever and so to the valves. The stops should be so set and the eccentric should be so placed on the shaft as to reverse the position of the valves *h*, closing one and opening the other immediately before each admission of steam to the cylinder. The throw of the eccentric which works the valves *h* may conveniently be about the same as that which works the ordinary slide-valve. The travel of the valves *h* should be no more than is necessary to give a free escape past them.

The supplementary or additional exit or exhaust-passages *e* may be placed on the lower side of the cylinder, and will then serve as relief-valves to aid in the discharge of water, which may be carried into the cylinder by priming.

Having thus described the nature of our invention and the manner of performing the same, we

would have it understood that what we claim is—

The combination, in a steam-engine, of the following parts, viz., the steam-cylinder, the two main exhaust-passages (one at each end of said cylinder) and the valves therefor, the two supplemental independent exhaust-passages (one at each end of said cylinder) and the independent supplementary exhaust-valves therefor, all con-

structed to operate substantially as before set forth.

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