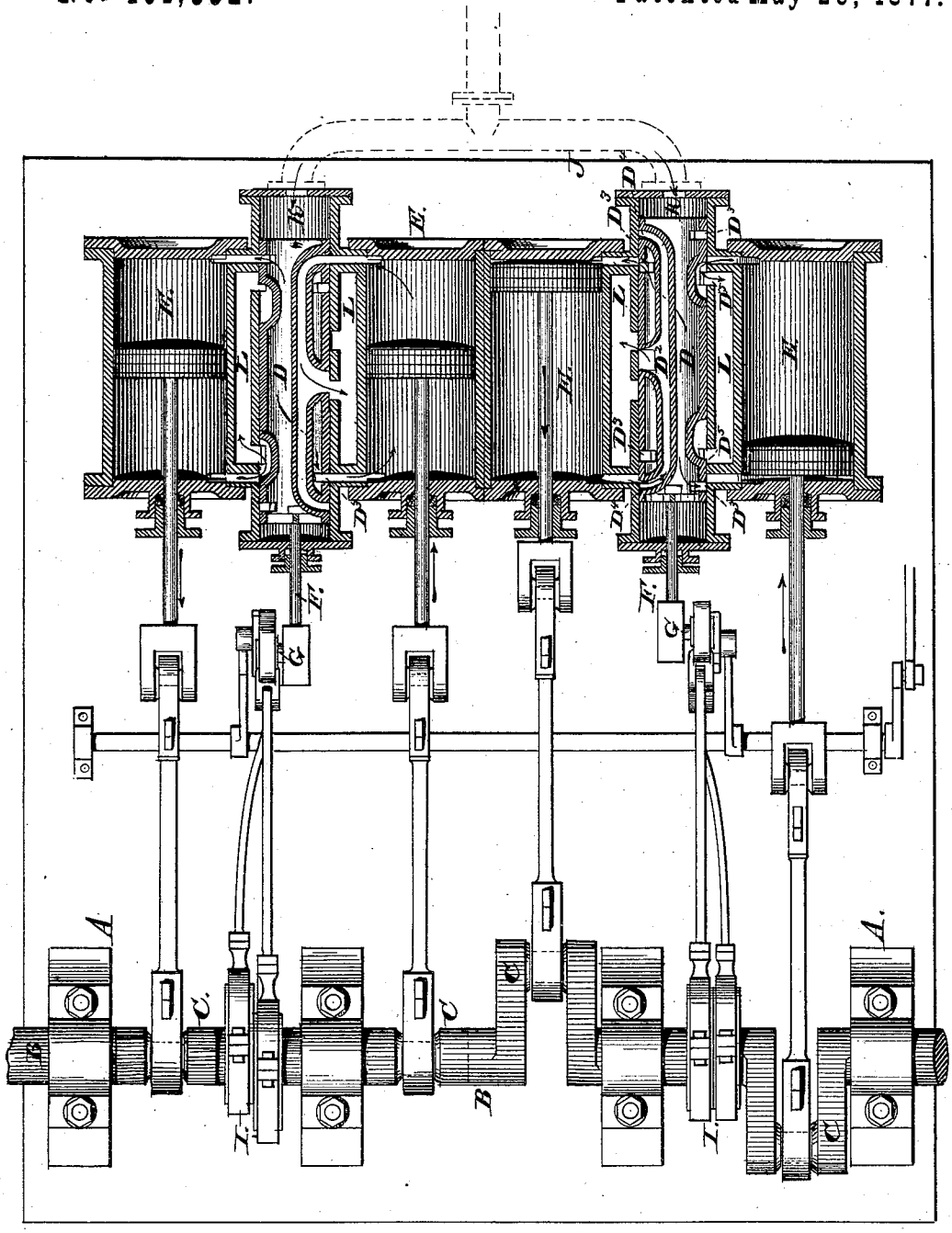
P. LOHMEYER.

VALVES FOR TWIN-ENGINES.

No. 191,352. Patented May 29, 1877.



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PAUL LOHMEYER, OF CLEVELAND, OHIO.

IMPROVEMENT IN VALVES FOR TWIN ENGINES.

Specification forming part of Letters Patent No. **191,352**, dated May 29, 1877; application filed April 21, 1877.

To all whom it may concern:

Be it known that I, PAUL LOHMEYER, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Valve for Twin Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to a new and useful improvement in valve for twin engines; also to novel means for applying the power of such engines to the main shaft.

In the drawings is represented a sectional view illustrating my invention.

A is the main frame of the engine; B, the drive-shaft. C are cranks upon the drive-shaft, arranged alternately at quarters. D are the valves. The valves D, as will be seen, are each constructed and arranged to supply steam to both of the adjacent cylinders. E are the cylinders. The valve D is made cylindrical in form and is connected to a valve-rod, F, which, by a suitable link-motion, G, and shaft H, is connected with the eccentrics I upon the main shaft B. The link-motion G is such as to give the valve just the required motion.

J is the steam-supply pipe, which opens directly into the valve-chamber K. The valve D is hollow from end to end, so that the steam passes directly into the interior valve and balances the same.

D^1 is a partition within the valve which divides off the exhaust-channel D^2. D^3 are the steam-ports, and D^4 the exhaust-ports. L is the exhaust-chamber from which the steam is wasted. The steam-ports D^3 lead directly in a straight line by the shortest course into the ends of the cylinders. Thus the steam is exposed for the very shortest time and in the very shortest channel to condensation.

By this means the steam is utilized to a greater extent than heretofore, and, owing to the small opportunity for condensation, more power is derived from the steam, or, in other words, less steam is wasted than heretofore, and as a consequence more power is derived from the same quantity of fuel expended.

Thus it will be seen that with a single valve I feed live steam to two adjacent cylinders, and the exhaust from one cylinder is through the channel D^2, while from the other cylinder it is through the exhaust-bridges D^5.

It will be observed that while two of these engines are at the dead-point, with their piston-heads at opposite ends of the cylinders, the other two engines have their piston-heads in the centers of the cylinders, but moving in opposite directions; therefore the effect on the shaft B is to almost perfectly balance the same and cause it to ride with very little friction in its boxes.

It will also be observed that the steam-ports D^3 are entirely independent for each of the two cylinders—that is, the steam-ports D^3 for one cylinder are in nowise connected with the steam-ports D^3 for the other cylinder; consequently, if it is desired to give to one cylinder more or less lead of steam, the steam-ports of that cylinder can be located accordingly in constructing the machine.

The arrangement of the exhaust-chamber so that it shall entirely surround the valve-chamber K is useful as utilizing the heat of the exhaust steam in maintaining a high temperature within the valve-chamber, and thereby prevents condensation of the steam therein. The heat within the valve-chamber is also maintained at a very high temperature, because of the fact that all the steam required for feeding the two adjacent cylinders is supplied through that one valve-chamber and valve.

The operation of the valve D is substantially as follows: Steam entering the steam-supply pipe passes freely into and through the valve D and balances the valve, the valve serving as its own steam-chest. The steam from the interior of the valve feeds steam into the end of one cylinder and into the opposite end of the adjacent cylinder, and at the same time exhausts the steam from the front of both pistons. When the pistons have reached the ends of the cylinders the eccentrics I, through the mediums of the shafts H, the link-motion G, and valve-rod F, shift the valve D, causing it to reverse its ports in the usual manner.

It will be understood that where the four

cylinders are employed, as shown in the drawings, all operating upon the same shaft, the lead of steam for either set of cylinders should be the same in both cylinders; but, of course, my invention is not limited to four cylinders, as two adjacent cylinders operated by the same valve may be employed alone to drive a shaft, and in that case the cranks would be set quartering, and one cylinder would require a different lead of steam from the other, so that when the piston is in one end of one cylinder it would be central in the other cylinder. In that event, the steam-ports in the valve and the steam-ports in the cylinder should be located accordingly when the machine is constructed.

What I claim is—

1. The combination, with a pair of cylinders, one of said cylinders provided with an exhaust-chamber with ports leading to the central portion thereof, and the opposite cylinder with a similar exhaust-chamber with ports leading to the ends of the same, of an intermediate open-ended valve constructed with steam-ports and central exhaust-passage for one cylinder, and steam and exhaust passages located near the ends of the valve for the opposite cylinder, substantially as and for the purpose set forth.

2. The combination, with a pair of steam-cylinders, constructed with suitable steam and exhaust-ports adjacent to each other, of a hollow valve provided with a central exhaust-passage, whereby live steam may be admitted through the valve to the steam-ports located therein, and also exhaust steam may be conducted from the ends of the valve to a central exhaust-port, substantially as and for the purpose set forth.

3. The combination, with the four cylinders E, of the open-ended valve D, each constructed with steam-ports D^3, exhaust-ports D^4 D^5, and exhaust-passages D^2, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PAUL LOHMEYER.

Witnesses:
FRANCIS TOUMEY,
W. E. DONNELLY.