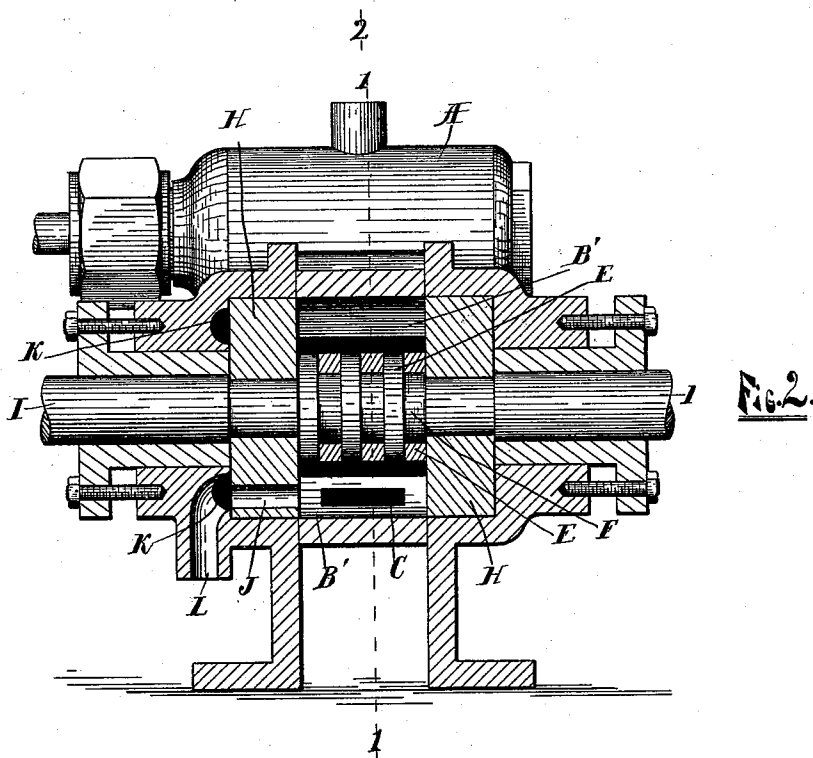
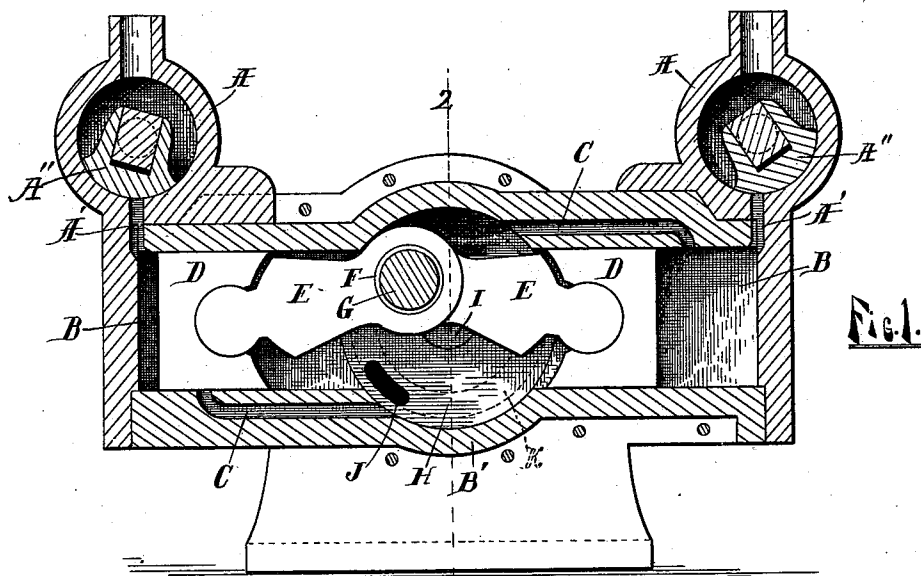


(No Model.)

W. C. KELLY.
STEAM ENGINE.

No. 547,581.

Patented Oct. 8, 1895.



Witnesses

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UNITED STATES PATENT OFFICE.

WALLACE C. KELLY, OF HASTINGS, MICHIGAN.

STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 547,581, dated October 8, 1895.

Application filed May 31, 1895. Serial No. 551,056. (No model.)

To all whom it may concern:

Be it known that I, WALLACE C. KELLY, a citizen of the United States, residing at Hastings, in the county of Barry and State of Michigan, have invented certain new and useful Improvements in Steam-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 appertains to make and use the same.

My invention relates to improvements in steam-engines, and its object is to provide the same with certain new and useful features hereinafter more fully described, and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section on the line 1 1 of Fig. 2 of a device embodying my invention. Fig. 2 is a transverse vertical section of the same on the line 2 2 of Fig. 1.

Like letters refer to like parts in both of the figures.

A A are the steam-chests, connected by ports A' A' to the respective ends of the rectangular working chambers B B.

A'' A'' are suitable valves operated by any suitable means to admit steam to said chambers at proper intervals.

The inner ends of the chambers B B are open into the opposite sides of a transverse cylindrical crank-chamber B', in each end of which chamber are the crank-wheels H H, mounted on the inner ends of the shafts I I and having their opposing faces in the plane of the sides of the working chambers B B.

G is a crank-pin provided with a sleeve F.

E E are oppositely-extended connecting-rods, journaled on the crank-pin G at their adjacent ends and pivoted to rectangular pistons D D at their outer ends. Said pistons move longitudinally in the chambers B B and operate at proper periods to close and open ports C C, extending from suitable places in the side of said chambers B B to the opposite sides of the crank-chamber B'. The connecting-rods E E are rectangular in cross-section and their opposite sides fit closely against the opposite faces of the wheels H H and the sides of the chambers B B, thus preventing the passage of steam from one side of said connecting-

rods to the other side of the same and dividing the chamber into two compartments. A port J is provided near the periphery of one or both of said crank-wheels, which connects the interior of said crank-chamber with an annular port within the annular head of the same. L is an exhaust-port extending from said annular port to the open air or elsewhere, as convenient.

The operation of my device is as follows: The valves A'' are adjusted to alternately admit steam to the respective chambers B B as the pistons D D respectively reach the outer ends of the said chambers, and to cut off the steam before said pistons open the ports C C, which ports when so opened permit the steam to flow into the crank-chamber and exert lateral pressure on the connecting-rods E E, this pressure being applied alternately at each side of the same. As the port J passes the connecting-rods E E it alternately connects the spaces at each side of said connecting-rods with the annular port K, said port J being so located as to exhaust steam from one side of the connecting-rods while steam is permitted to act against the other side of the same. I thus use the steam twice, first against the pistons in a horizontal direction and then vertically against the connecting-rods. I thus secure a very constant pressure upon the crank at all times and high economy of steam.

I do not limit this method of exhausting the steam to the double construction shown. It will operate equally as well in conjunction with but one steam-chest, valve, working chamber, piston, and connecting-rod.

What I claim is—

1. In a steam engine having a cylinder, crank chamber, piston, and crank wheel, a port in said crank wheel, a port in the head of said crank chamber, traversed by the port in said wheel, and an exhaust port from the port in said head, substantially as described.

2. In a steam engine, a crank chamber, a crank wheel in the end of said chamber, a working chamber open to said crank chamber at one end, a piston traversing the working chamber, a connecting rod dividing said crank chamber into two separate steam chambers, a port in said crank wheel, and a port in the head of said crank chamber having an exhaust port, substantially as described.

3. In a steam engine, a cylindrical crank chamber, rectangular working chambers, extending oppositely from said crank chamber, and open at the same, valves to admit steam
5 to the outer ends of said chambers, pistons in said chambers, lateral ports connecting said chambers with opposite sides of said crank chamber, crank wheels in the ends of said chamber having their opposing faces in the
10 plane of the sides of the working chamber, connecting rods dividing the said chambers into two separate steam tight chambers, a port in one of said crank wheels, an annular port in the head of the crank chamber and opposite the port in said wheel and an exhaust
15 port from said latter port, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WALLACE C. KELLY.

Witnesses:

T. J. BRASSEAU,

WM. H. STEBBINS.