

UNITED STATES PATENT OFFICE.

GORDON MCKAY, OF PITTSFIELD, MASSACHUSETTS.

PISTON-VALVE CUT-OFF.

Specification of Letters Patent No. 6,324, dated April 17, 1849.

To all whom it may concern:

Be it known that I, GORDON MCKAY, of
Pittsfield, county of Berkshire, and State of
Massachusetts, have invented a new and
5 useful Cut-Off Valve; and I do hereby de-
clare the following to be a full, clear, and
exact description thereof, reference being had
to the accompanying drawings, whereof—

Figure 1, is a longitudinal sectional view
10 of the interior of the steam chest, or cylin-
der, together with a portion of the main
cylinder of the steam engine; Fig. 2, is a
cross section through the cut-off at the line
y, y, Fig. 1, and Fig. 3, is a section through
15 the steam passage *p* from the steam chest
into the main cylinder at the line *x x*.

My cut off is constructed on the princi-
ple of forming a cylindrical valve-chest,
within which works a piston rod, carrying
20 two pistons, one near each end, and having
the pistons of such thickness as by their
edges to close the steam puts or passages
at the two opposite ends of the cylinders
and to have between the two pistons, a
25 cut-off constructed in such a manner as to
be caused to slide with each piston, alter-
nately, through a part of its traverse, and
to make a steam joint with the face of the
piston while being pushed before it. The
30 two parts of the cut off are packed so as to
fit the interior of the valve chest and are
connected together by a pipe or tube sur-
rounding the piston rod of the two piston
valves above described.

35 From the above description it will appear
that my invention may be properly called a
cylindrical-ring cut-off.

By reference to Fig. 1, the piston-valve
rod will be seen at R; the two piston valves
40 which correspond to the two steam passages
p and *p'*, and to the two opposite ends of
the main working steam cylinder of the en-
gine, are B and B';—the former, (B,) clos-
ing and opening the steam passage *p*, and
45 the latter, (B'), at the same time, opening
and closing the steam passage *p'*.

I is the induction pipe from the boiler
bringing the steam into the steam-chest be-
tween the two cut-off valves A and A'.
50 These two valves are connected together by
the tube *t* surrounding the valve-rod R. *o* is
a slot in this tube, through which passes the
pin *e*, by means of which, when the rod R
is made to revolve, on its axis, it will carry
55 the cut-off valves A and A' round, also,

whereby if it be desired to work the steam
at full stroke, the openings F and F' may
be brought to stand opposite to the steam
passages *p* and *p'*, and the steam will not
then be intercepted by the movements of 60
A and A', but only by the steam valves B
and B'.

As the positions of the valves and cut-offs
are represented in the drawings, steam may
be supposed to be entering by the induction 65
pipe I, passing through the cut-off A by the
passages *a, a, a, a*, (seen in the section Fig.
2,) to enter the main working cylinder of
the engine by the passage P. The valves
and cut offs are supposed to be moving to- 70
ward the left, or bottom of the steam chest,
the edge *f'* of the cut-off A' being in con-
tact with the surface of the valve B' at *g'*,
while the cut-off A has the edge *f* at some
distance from the surface *g'* of the piston B. 75
The length of time occupied by this space
between *f* and *g* in passing across the steam
passage *p*, determines the length of time or
part of the stroke in which steam flows
into the engine cylinder. 80

When the piston B has moved so far to-
ward the bottom of the steam chest as to
bring the edge *f* of the cut-off A below the
steam passage *p*, that passage will be closed
and the steam will be cut off, and will re- 85
main cut off from the lower end of the cyl-
inder C while the cut off obstructs its pas-
sage, and on the return movement of the
valve rod R, the cut-off will remain in its
position, until the piston valve B returns, 90
comes in contact at its face *g* with the ends *f*
of the cut-off, and moves it upward beyond
the passage *p*. These two surfaces forming
a steam tight joint, and there being less
95 pressure in the cylinder C than in the steam
chest, the line of juncture will remain with-
out power in the steam to open the joint.

At Fig. 3 the steam passage is seen to be
traversed by the oblique pieces *z, z*, which I
call guard strips, and which cross the steam 100
passage in such directions as to prevent the
packing of the piston B from being thrust
into the opening of the steam passage and
cut away.

What I claim as my invention and desire 105
to secure by Letters Patent, is—

The cut-off, composed of two cylindrical
portions or rings working steam tight with
the sides of the steam chest and also fitting
steam tight when brought alternately in 110

contact with the flat surfaces of two pistons,
between which said cut off works, whereby
steam is prevented from passing into the
working cylinder of the steam engine while
5 either the cut off alone, or the cut off and
piston together are passing by the steam
passage said cut offs being moved by the

pistons and attached to each other substan-
tially in the manner herein described.

GORDON McKAY.

Witnesses:

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JAMES W. GOWAN.