

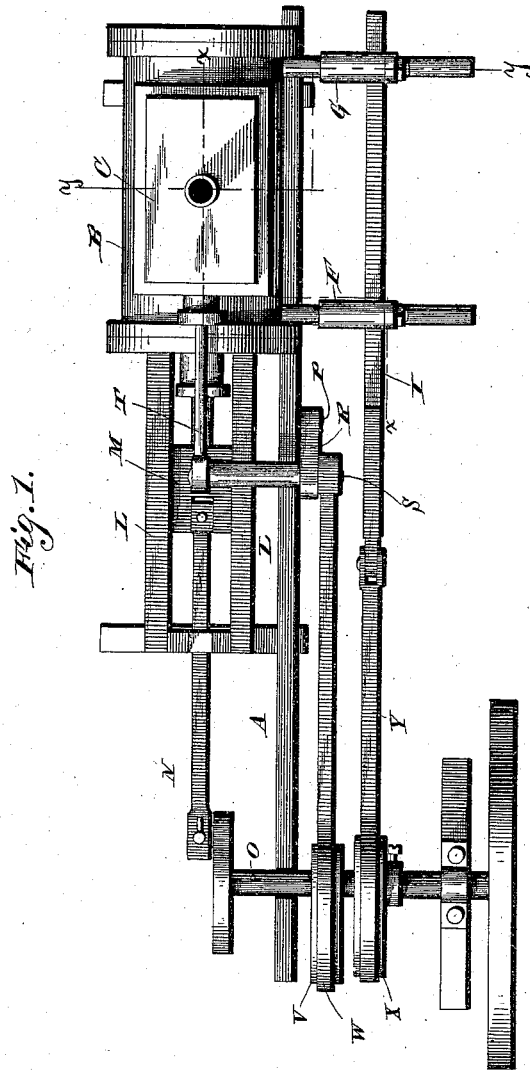
(No Model.)

2 Sheets—Sheet 1.

W. K. KIGHT.
STEAM ENGINE.

No. 382,309.

Patented May 8, 1888.



Witnesses.

W. B. Taylor,
J. W. Garner

Inventor.

William K. Kight.

By his Attorneys.

C. H. Snow & Co.

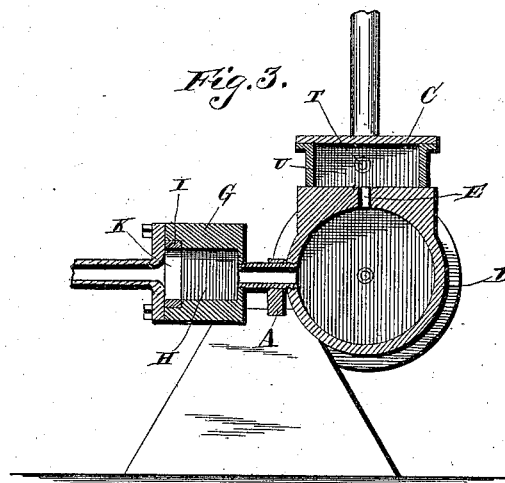
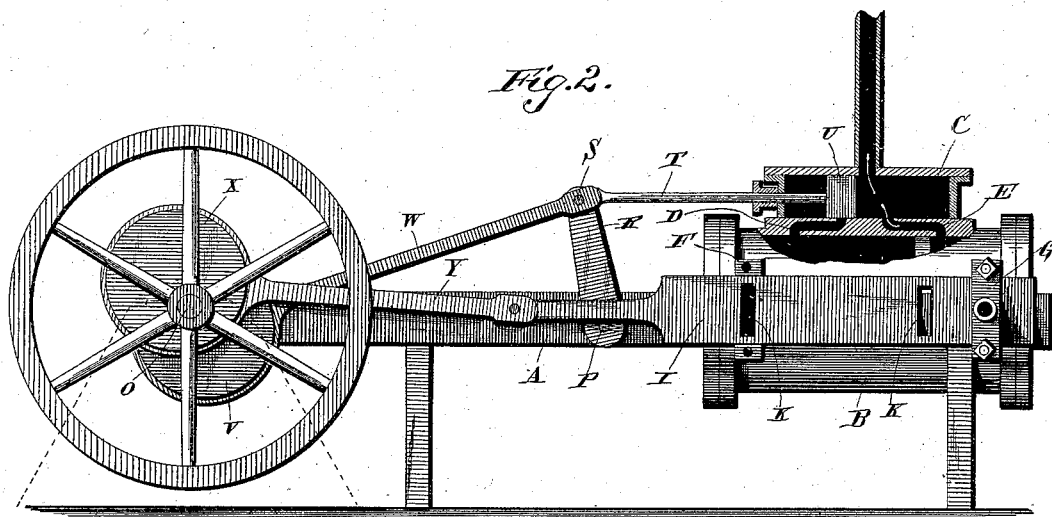
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William K. Knight.

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UNITED STATES PATENT OFFICE.

WILLIAM KIETH KIGHT, OF KEENERS, MISSOURI, ASSIGNOR OF ONE-FIFTH
TO J. A. BOHNERT, OF SAME PLACE.

STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 382,309, dated May 8, 1888.

Application filed December 1, 1887. Serial No. 256,680. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM KIETH KIGHT, a citizen of the United States, residing at Keen-
ers, in the county of Butler and State of
5 Missouri, have invented a new and useful Im-
provement in Steam-Engines, of which the
following is a specification.

My invention relates to an improvement in
steam-engines; and it consists in the peculiar
10 construction and combination of devices that
will be more fully set forth hereinafter, and
particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is
a top plan view of a steam-engine embodying
15 my improvements. Fig. 2 is partly a side ele-
vation and partly a vertical longitudinal sec-
tional view on the line *xx* of Fig. 1. Fig. 3 is
a vertical transverse sectional view taken on
the line *yy* of Fig. 1.

20 A represents the bed of the engine, on one
side of which is secured a steam-cylinder, B,
having a steam-chest, C, on its upper side, and
ports D and E extending from the said steam-
chest to the ends of the cylinder.

25 F and G represent a pair of pipes, which ex-
tend from the ends of the cylinder, and are
each provided with a port, H. The capacity
of the said ports is much greater than the ca-
pacity of the inlet-ports D and E. Transverse
30 openings are made in the pipes F and G and
intersecting the ports therein, and in the said
transverse openings is fitted an exhaust slide-
valve or bar, I, which is provided with ports
K, adapted to register alternately with the ex-
35 haust-ports H of the pipe. The said slide-
valve or bar is arranged steam-tight in the ex-
haust-pipes by means of suitable packing-
boxes, as shown.

L represents parallel guideways, which pro-
40 ject from the front end of the cylinder B, and
in the said guideways is guided a cross-head,
M, which is connected to the piston-rod in the
usual manner, and is also connected to the in-
ner ends of a pitman, N, the outer end of the
45 said pitman being connected to a crank on the
bearing-shaft O.

P represents a rock-shaft, which is journaled
in a bearing at a suitable distance in front of
the cylinder, and below the same and to the
50 inner end of the said rock-shaft is attached a
rock-arm, R. A pin, S, extends transversely

through the upper end of the rock-arm, and
to one end of the said pin is connected the
front end of a valve-rod, T, the said rod being
connected at its rear end to a slide-valve, U, 55
in the steam-chest, the said valve being adapt-
ed to alternately uncover the inlet-ports D E
of the steam-cylinder.

V represents an eccentric, which is secured
to the driving-shaft, and to which is attached 60
the front end of a pitman, W. The rear end
of the said pitman is connected to the pin S.

X represents an eccentric, which is also se-
cured to the driving-shaft, and is arranged at
a suitable angle with relation to the eccentric 65
V. A pitman, Y, connects the said eccentric
X to the exhaust-valve or slide-bar I.

The operation of my invention will be very
readily understood from the foregoing descrip-
tion in connection with the accompanying 70
drawings. The eccentrics are so timed that
when the valve U opens one of the inlet-ports
of the steam-cylinder the slide-valve I has one
of its ports arranged opposite the exhaust-port
in the pipe leading from the opposite end of 75
the cylinder; and inasmuch as the capacity of
the exhaust-ports is very much in excess of the
inlet-ports it follows that dead steam is pre-
vented from exerting back-pressure on the pis-
ton, as the same is moved in either direction 80
by the pressure of the live steam against it;
consequently the capacity of the engine is in-
creased.

Having thus described my invention, I
claim— 85

1. The combination, in a steam-engine, of the
cylinder having the steam-chest and the inlet-
ports communicating with the steam-chest
near the center thereof, and with the cylinder
near the ends thereof, the exhaust-pipes F G 90
projecting transversely from the ends of the
cylinder, and having the exhaust-ports, the
slide-valve U, arranged in the steam-chest and
adapted to alternately uncover the inlet-ports,
and the exhaust slide-valve I, secured to the 95
exhaust-pipes, and having the ports K, adapted
to alternately register with the exhaust-ports,
substantially as described.

2. The combination, in a steam-engine, of the
cylinder having the steam-chest, and the inlet- 100
ports communicating with the steam-chest near
the center thereof, and with the cylinder near

the ends thereof, the exhaust-pipes F G, projecting transversely from the ends of the cylinder and having the exhaust-ports, the slide-valve U, arranged in the steam-chest and
5 adapted to alternately uncover the inlet-ports, the exhaust slide-valve I, secured in the exhaust-pipes, and having the ports K adapted to alternately register with the exhaust-ports, the driving-shaft having the eccentrics V X,
10 the pitman Y, connecting the latter with the

valve I, the rocking-arm R, connected to the valve U, and the pitman connecting said arm to the eccentric V, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WILLIAM KIETH KIGHT.

Witnesses:

I. M. DAVIDSON,
JNO. N. PEARCE.