

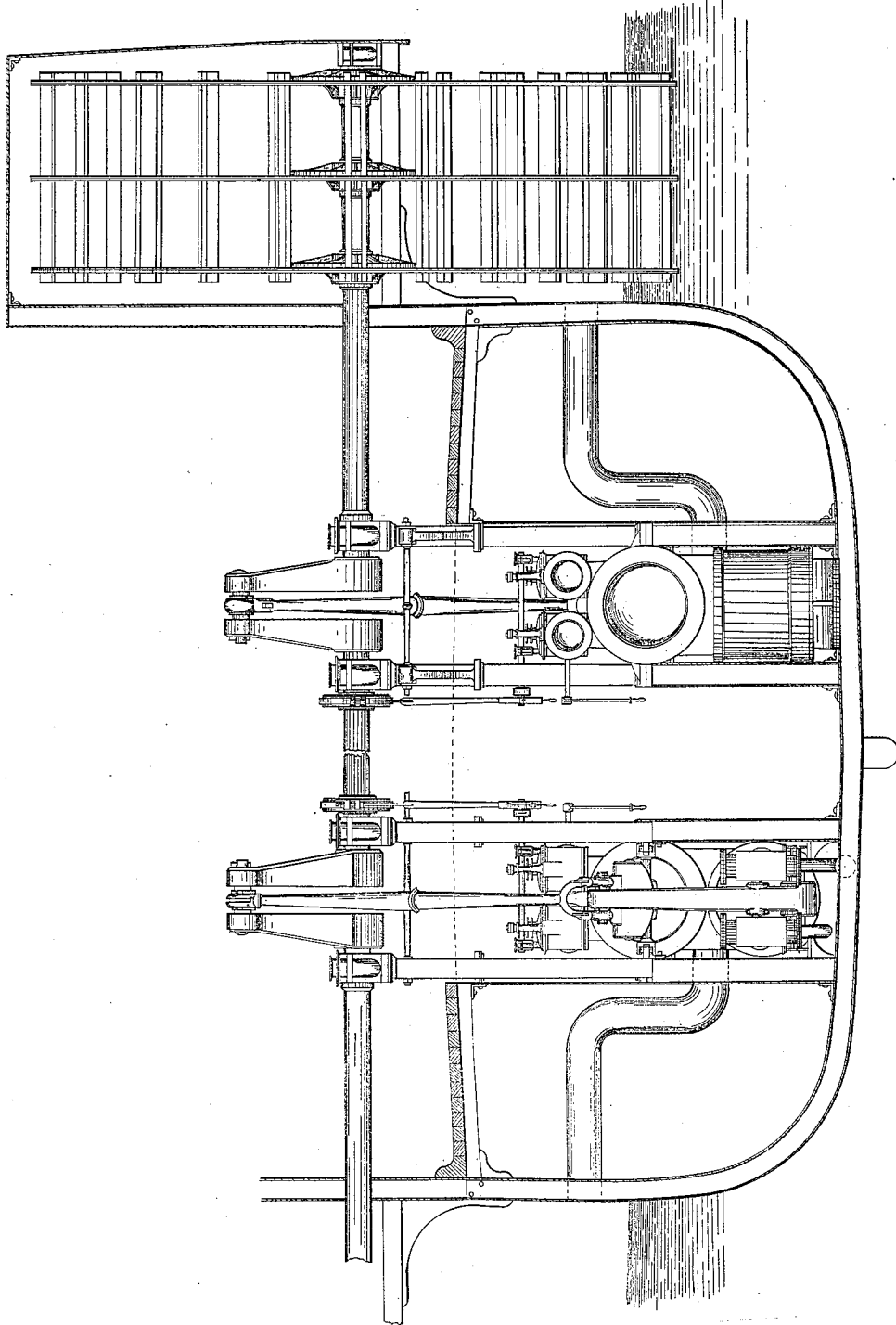
Sheet 1 of 2 Sheets.

W. A. Lighthall,

Reciprocating Steam Engine,

No. 6,811,

Patented Oct. 23, 1849.



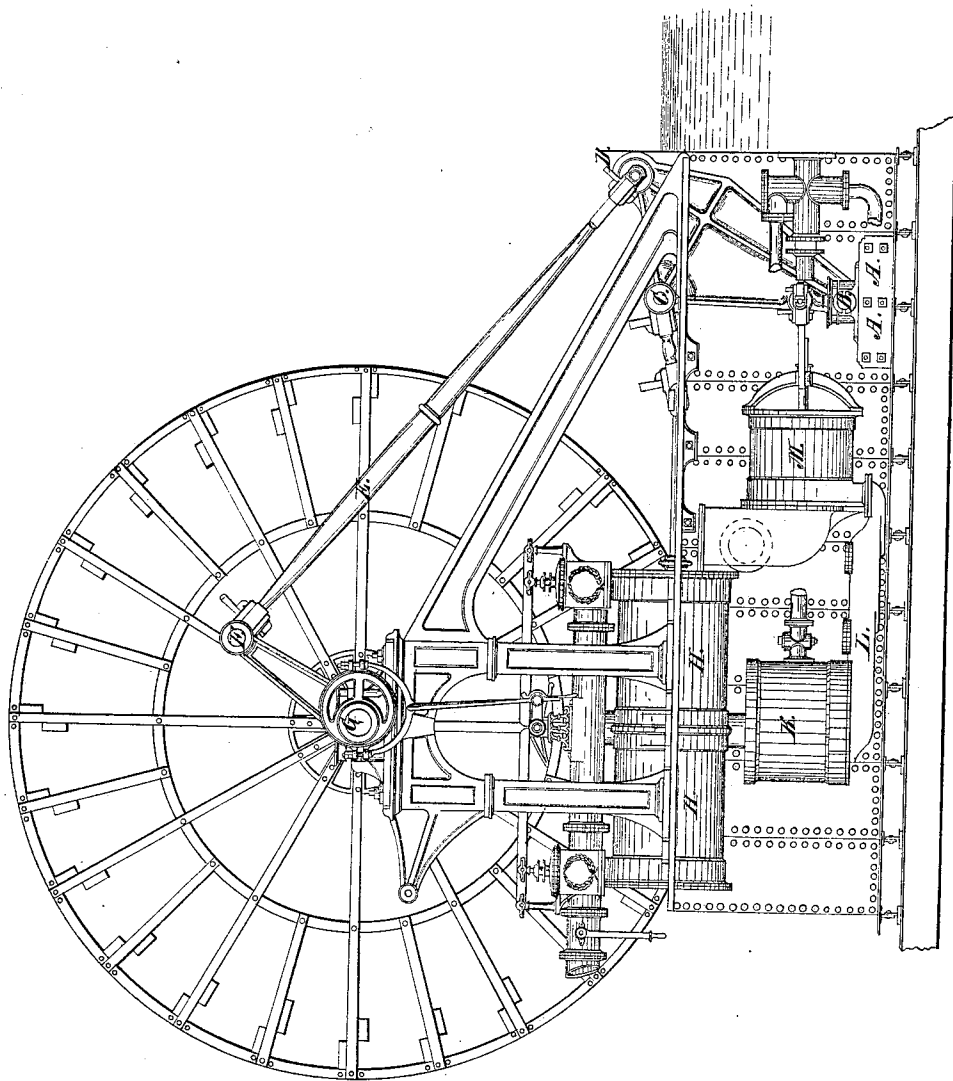
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Sheet 2 of 2 Sheets.

Reciprocating Steam Engine.

No 6,811.

Patented Oct. 23, 1849.



UNITED STATES PATENT OFFICE.

W. A. LIDTHALL, OF ALBANY, NEW YORK.

ARRANGEMENT OF THE LEVER HALF-BEAM OF STEAM-ENGINES.

Specification of Letters Patent No. 6,811, dated October 23, 1849.

To all whom it may concern:

Be it known that I, WILLIAM A. LIGHT-
HALL, of the city of Albany, State of New
York, have invented certain Improvements
in Steam-Engines; and I do hereby declare
the following is a full and exact descrip-
tion of the same.

By reference to the accompanying draw-
ings it will be seen that H H represents the
cylinder lying horizontally, it may be placed
more or less inclined when so required, K
the condenser, L the bed plate, M the air
pump, A A the pillow block fastened to the
keelsons and bottom of the vessel B the beam
center, C the center of attachment to the
piston or prime mover, D the upper center
for "connecting rod" E, F the crank pin,
G the shaft center.

My improvement consists in reversing or
inverting the pendulum half beam, by fixing
or placing the main beam center B below
instead of above, by which means I employ
a different order of lever, than when work-
ing the beam as a hanging or pendulum
half beam, because, in the latter the weight
or resistance to be overcome is between the
power and the fulcrum, whereas in my im-
proved application of the half beam and
mode of working the same, the power is
applied between the fulcrum and the weight
or resistance to be overcome which mode of
applying the power enables me to work a
long crank instead of a short one.

The great advantages in regard to dimin-

ished friction, lessening of weight, greater
facility of fastening or holding the engine,
when working a long crank instead of a
short one, together with the fact of doing
so with the half beam instead of the whole
beam, are too well known and appreciated
by practical men and those skilled in the art
of steam engineering to require their being
set forth at large. It might however at first
sight appear that in working this order of
lever (to wit where the power is applied
between the fulcrum and weight) that
though velocity was gained, yet that power
was lost, but when we convert the recipro-
cating or vibrating motion of the beam into
a rotary motion by means of a crank the
power lost on the beam is regained by the
lengthening of the crank lessening the
weight and friction and giving greater ease
of movement.

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

The arrangement of a horizontal cylin-
der, with a lever half beam having its ful-
crum at its lower end, and connecting rod
attachment at its upper end, with crank
and shaft above the cylinder, substantially
in the manner and for the purposes herein
before described.

WM. A. LIDTHALL.

Signed in the presence of—

HAMILTON MORTON,
ADOLPHUS GORHAM.