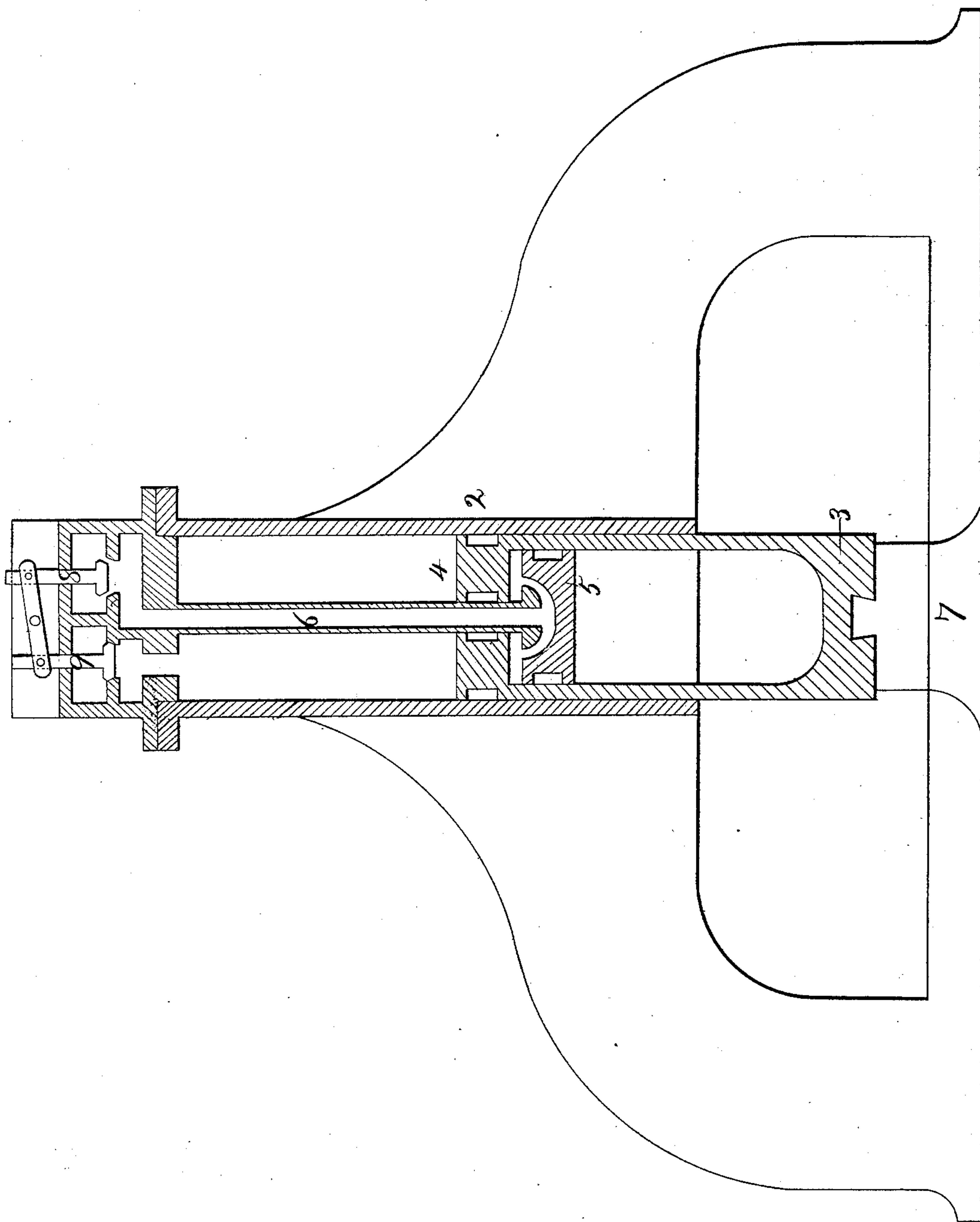


P. Danvers.

Steam Hammer.

No 21,489.

Patented Sep. 14, 1858.



UNITED STATES PATENT OFFICE.

P. DANVERS, OF NEW YORK, N. Y.

STEAM-HAMMER.

Specification of Letters Patent No. 21,489, dated September 14, 1858.

To all whom it may concern:

Be it known that I, PATRICK DANVERS, of the city, county, and State of New York, have invented a new and useful Improvement in Steam-Hammers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, said drawing representing a central vertical section of a steam-hammer constructed according to my invention.

My improvement consists in the employment, in combination with that kind of steam-hammer whose hammer block or ram consists of or forms part of a cylinder or ram working on a stationary piston, of an external stationary cylinder which receives a piston on the head of the reciprocating cylinder or ram and which is furnished with a proper system of valves to admit steam to act above the last-named piston for the purpose of adding the force due to the pressure of steam on the said piston to the force due to the fall of the ram by gravitation and thereby increasing the power of the hammer besides making its operation quicker.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

1, in the drawing, represents the framing which is of a form substantially like that generally heretofore adopted for steam hammers.

2, is the external cylinder which constitutes the principal feature of my invention, occupying the position generally occupied by the guides, and either cast with or securely bolted to the framing. This cylinder is open at the bottom, but closed at the top by a head 10, which constitutes the bottom of the steam chest 11.

3, is the reciprocating cylinder or ram, having at its head the piston 4, which is fitted steam tight to the cylinder 2, and properly packed.

5 is the stationary piston attached by a tubular rod 6, to the head 10, of the external cylinder and fitted steam tight to the interior of the reciprocating cylinder or ram. The head of the latter cylinder or ram is fitted with a stuffing-box or otherwise properly packed steam-tight around the rod 6.

7 is the anvil.

Steam is admitted to the cylinder or ram 3, above the piston 5, by a valve 8, on the steam chest 11, which valve is opened at the proper time by hand or by suitable mechanism to allow the steam to pass through the hollow piston rod. The steam thus admitted raises the said cylinder or ram. Another valve (not shown) is provided for the exhaust of the steam from said cylinder when it has been raised to the proper height and it is required to descend to strike the blow. A valve 9, similar to 8, is represented for the admission of steam to the upper part of the external cylinder to act above the piston 4, to increase the force of the descent of the cylinder or ram 3, and the blow of the hammer. By connecting these valves by a lever 12, one valve is opened by the act of closing the other, and the action of the steam on one is made to balance its action on the other. An exhaust valve (not shown) is also provided for the cylinder 2, and this may be connected with the exhaust valve of the cylinder 3, in the same manner as the steam valves are connected.

I do not consider it necessary to describe particularly the valves or valve gear, as almost any system of valves and gear suitable for steam engines may be applied, as will be well understood by engineers.

I do not claim the combination of the reciprocating cylinder and stationary piston, as that constitutes what is known as the "Condie steam hammer." Nor do I claim attaching the hammer to a piston working in a stationary cylinder, as that constitutes "Nasmyth's steam hammer." But

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

The combination with the reciprocating cylinder or ram 3, which constitutes or has attached to it the hammer-block; and the stationary piston 5, of the piston 4 and the external steam cylinder 2, provided with a proper system of valves; the whole operating substantially as herein specified.

P. DANVERS.

In presence of—

JAMES F. CHAMBERLAIN,
JOHN GLASS.