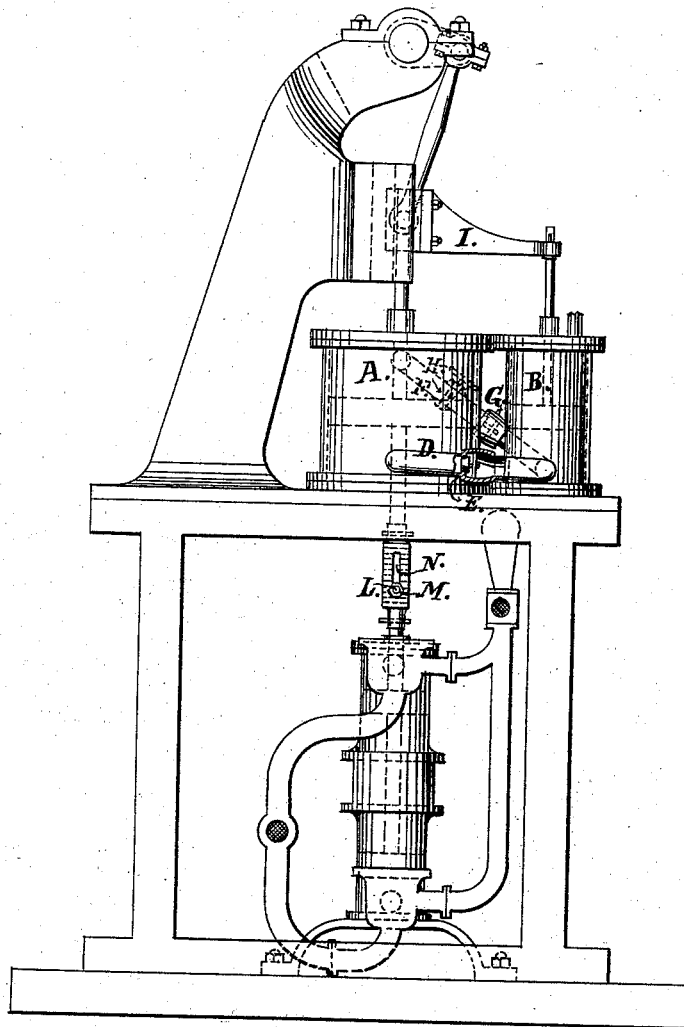


J. TREGONING & M. HASTINGS.
Steam-Pump.

No. 214,597.

Patented April 22, 1879.



Witnesses.

H. W. Stackpole
J. Case

Inventors

John Tregoning
Michael Hastings
Per G. Stackpole
Atty

UNITED STATES PATENT OFFICE.

JOHN TREGONING AND MICHAEL HASTINGS, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN STEAM-PUMPS.

Specification forming part of Letters Patent No. **214,597**, dated April 22, 1879; application filed December 12, 1877.

To all whom it may concern:

Be it known that we, JOHN TREGONING and MICHAEL HASTINGS, both of the city of Brooklyn, in Kings county and State of New York, have jointly invented certain new and useful Improvements in Steam-Pumps, which invention is fully set forth in the following specification and accompanying drawing, which is a side elevation of our direct-action double-acting plunger steam-pump.

Our invention consists in the application to a steam-pump of an auxiliary cylinder, and the manner of connecting and operating the same.

The object of our invention is to produce a direct-action double-acting plunger steam-pump in which, by means of an auxiliary steam-cylinder, the weight of the necessary attachments for connecting the pump with the engine is counterbalanced.

A is the main cylinder. B is the auxiliary cylinder. C is an adjustable connecting-rod. D is a connecting-pipe, connecting the main cylinder with the auxiliary cylinder, and which is for the purpose of admitting steam from the main cylinder to said auxiliary cylinder. This

pipe has a check-valve, E, to prevent steam from being forced back to the main cylinder, so that it may act as a cushion to the auxiliary piston on the downward stroke. An additional pipe, F, is provided, connecting the top of the main cylinder to the bottom of the auxiliary cylinder, and is provided with a check-valve, G, and also with a throttle-valve, H, so that should more cushioning be required on the downstroke live steam may be let on.

The two piston-rods are made fast to each other by means of the connecting-arm I.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

The combination and arrangement of the auxiliary cylinder B and connecting-pipes D and F, having valves E and G, and the throttle-valve H with the main cylinder A, substantially as and for the purpose set forth.

JOHN TREGONING.
MICHAEL HASTINGS.

Witnesses:

H. W. STACKPOLE,
J. P. CASE.