M. J. WALSH.

HYDRAULIC AND PNEUMATIC JACKS.

No. 182,974. Patented Oct. 3, 1876.

Fig. 1

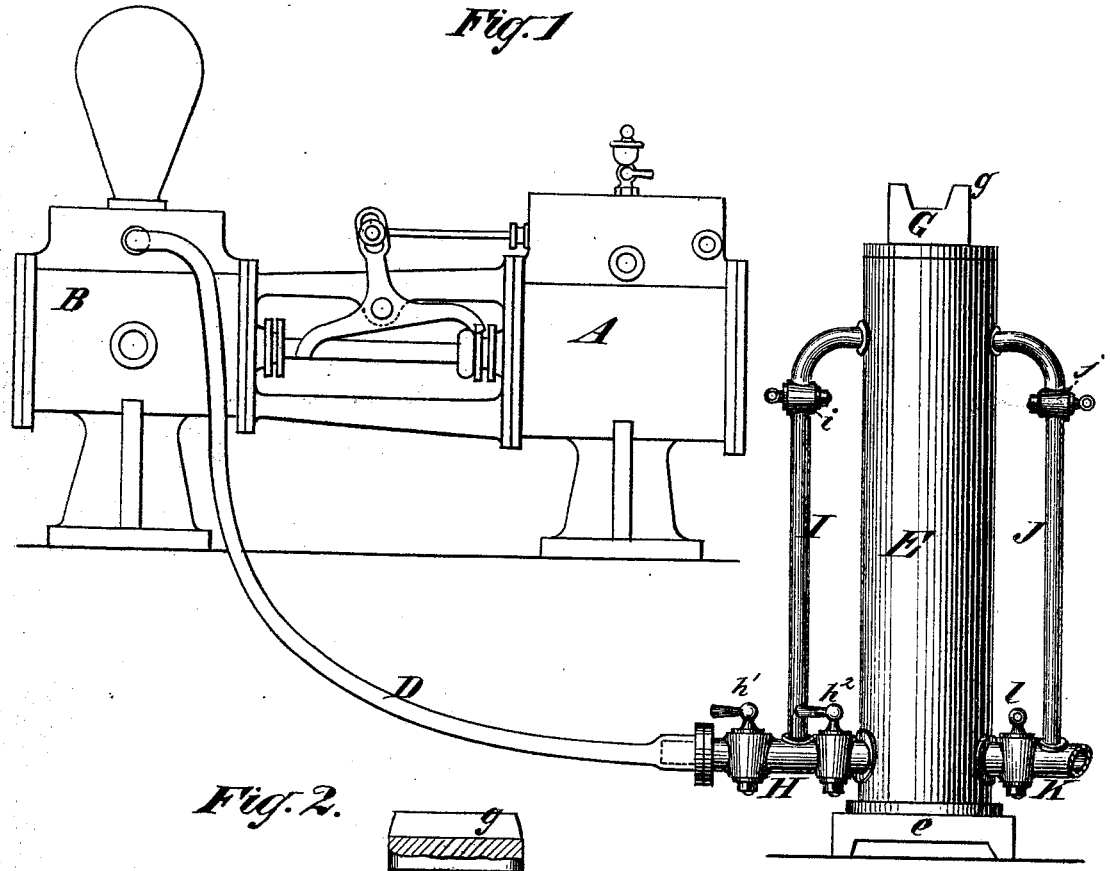
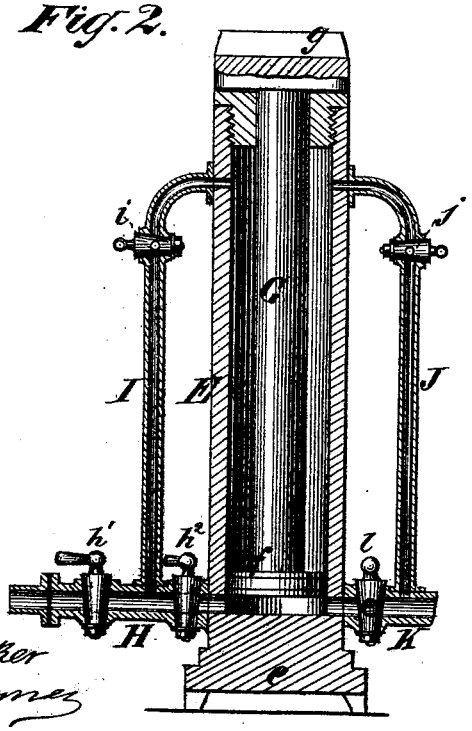


Fig. 2.



Witnesses
John Becker
Fred. Haynes

M. J. Walsh
by his Attorneys
Brown & Allen

UNITED STATES PATENT OFFICE.

MAURICE J. WALSH, OF NEW YORK, N. Y.

IMPROVEMENT IN HYDRAULIC AND PNEUMATIC JACKS.

Specification forming part of Letters Patent No. **182,974**, dated October 3, 1876; application filed September 15, 1875.

To all whom it may concern:

Be it known that I, MAURICE J. WALSH, of New York, in the county and State of New York, have invented an Improvement in Hydraulic and Pneumatic Jacks for Pressing, Stowing, and other purposes; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to a jack which may be applied to various uses, but is designed more particularly for stowing cotton and other merchandise in holds of vessels, warehouses, or elsewhere.

The object of my invention is, first, to render a hydraulic or pneumatic jack more portable than those in common use; and, secondly, to provide for its being worked by steam or other power.

To this end the invention consists in a novel mode of connecting a jack with an engine for operating the same, and in certain details of construction and arrangement of parts in the jack itself, as hereinafter particularly described, whereby the successful and rapid operation of the jack is accomplished.

In carrying out my invention I construct the jack proper with a simple cylinder and ram, and instead of having a pump and reservoir attached, I connect the jack by a flexible pipe with a pumping-engine located at any suitable distance from the jack. This pumping-engine may be of any suitable description, and may be driven by steam, air, or gas. The jack is provided with a series of pipes and valves, by means of which the water or air may be caused to force the ram both outward and inward, and provision is made for the escape of the water or air after being used for operating the jack.

To enable those skilled in the art to which my invention appertains to make and use the same, I will proceed to describe one mode of carrying it into effect, reference being had to the accompanying drawing, in which—

Figure 1 is a side view, representing a pumping-engine connected by a flexible pipe with a hydraulic jack. Fig. 2 is a vertical sectional view of the jack.

The pumping-engine is preferably of such dimensions as to admit of its being moved from place to place, and when in use for operating the jack it is located at any suitable point with relation to the jack and also to the boiler or other source from which the motive power is obtained. It may be supplied with steam, air, or gas through a flexible tube; or may be attached directly to the boiler or other motive-power-generating apparatus. It is here represented as a steam-engine, A, connected with a pump, B, in the ordinary manner, and with the pump connected with the jack by a flexible pipe, D.

The jack proper consists of a cylinder, E, and a ram, G, working therein. The base of the cylinder is preferably square, and is provided with feet *e*, the better to enable it to engage with a bale of cotton or other merchandise, or with a block placed against the bale when used for stowing cargoes and for similar purposes. The ram G has its head *g* constructed with a view to facilitate its engagement with a samson's-post or some fixed obstacle in the hold of a vessel or elsewhere. To the ram-cylinder E, near its base, is attached a pipe, H, one end of which communicates with the interior of the cylinder, and the other end with the pump B by means of the flexible pipe D. To the pipe H is attached the lower end of a pipe, I, the upper end of which communicates with the interior of the cylinder E near the top thereof, and is provided with a two-way valve or stop-cock, *i*. The pipe H is provided with two stop-cocks or two-way valves, h^1 h^2, or, in lieu thereof, with a three-way cock. When the two stop-cocks are used they are so arranged that the pipe I terminates between them, as shown; and when a three-way cock is used it may be arranged at the point where the pipe I terminates, so as to enable said pipe to communicate with the pipe H in either direction. To the cylinder E is attached a pipe, K, at about the same level as the pipe H, and about opposite the same. To the pipe K is attached the lower end of a pipe, J, similar to the pipe I, and communicating with the cylinder E in a similar manner, and provided with a stop-cock, *j*. By placing the pipes I J opposite each other, as shown, they serve as handles for the jack to facilitate the moving and

handling thereof. The pipe K is provided with a stop-cock, *l*, or, in lieu thereof, with a three-way cock.

When only the stop-cock *l* is used, it is placed between the cylinder E and the point of junction of the pipes J K.

The operation is as follows: When the ram G is to be forced outward, the cocks h^1 h^2 are opened and the cocks *i j l* are closed. The water or compressed air is forced by the engine A from the pump B through the flexible pipe D to the cylinder E, which it enters by way of the pipe H, and acts upon the lower surface of the piston *f* of the ram G. When the ram is to be withdrawn, or forced inward, the cock h^2 is closed and the cock *i* is opened, so as to cause the water to pass up the pipe I and enter the cylinder above the piston *f*, in order to force the ram inward, while the water previously used for elevating the ram is allowed to escape through the pipe K by opening the cock *l*. When the ram is to be again raised, the cock h^2 is opened and the cocks *i* and *l* are closed, so as to cause the water to act below the piston as before, while the water previously used for depressing the piston is allowed to escape through the pipes J and K by opening the cock *j*.

The pipe K may be allowed to discharge the waste water or air directly into the air, or may connect with a receptacle of any suitable description.

An apparatus constructed and arranged as herein described may be used for various lifting, pressing, and other purposes. It is principally intended for stowing cargoes in the holds of vessels or elsewhere, and when used for such purposes one end of the jack is placed against a samson's-post or other fixed obstacle and the other end against the bale to be stowed, and power applied to the ram as above described. The apparatus is light and portable, easily moved from place to place, and it is not necessary to provide the jack with a reservoir for holding a quantity of water to be used over and over again, as in hydraulic jacks of the ordinary construction. A number of jacks may be connected with and operated by the same engine, and by means of the flexible connections they may be moved to the desired points without the necessity for moving the pumping-engine.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a portable cylinder, E, and ram G, with its head *g*, constituting the jack proper, a detached stationary or movable pumping-engine, and a flexible pipe connecting the pump of the engine with the ram-cylinder, substantially as herein described.

2. The combination, with the cylinder E and ram G, of the pipes H, I, J, and K, and their respective valves, the whole being arranged substantially as shown and described and for the object specified.

MAURICE J. WALSH.

Witnesses:

MICHAEL RYAN,

FRED. HAYNES.