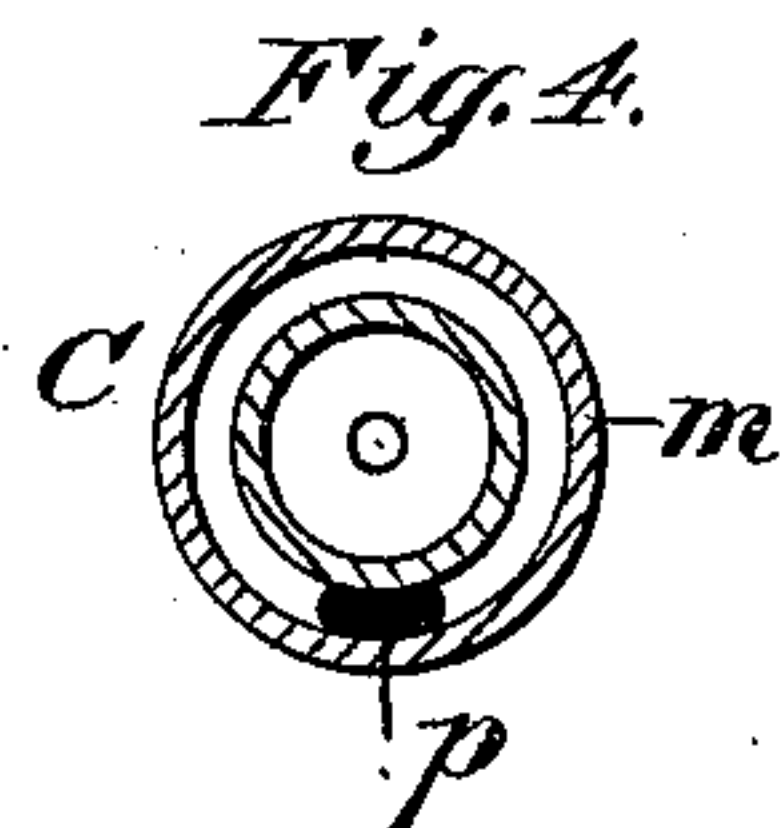
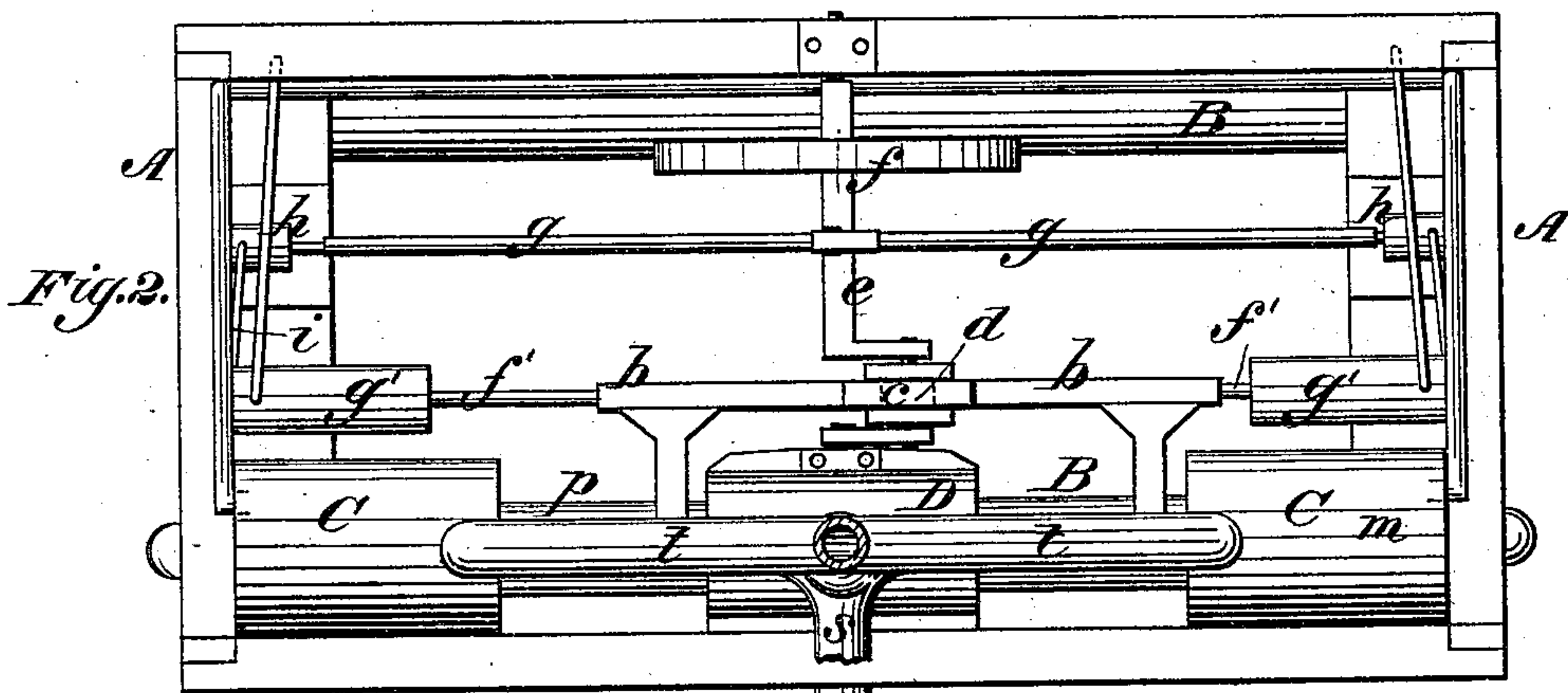


C. B. WELLS.  
Pumping Engine.

**Patented Aug. 10, 1880.**



INVENTOR:

C. P. Wells

ATTORNEYS.



# UNITED STATES PATENT OFFICE.

CHARLES B. WELLS, OF RONKONKOMA, NEW YORK.

## PUMPING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 231,128, dated August 10, 1880.

Application filed April 9, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES BURTON WELLS, of Ronkonkoma, in the county of Suffolk and State of New York, have invented a new and useful Improvement in Pumping-Engines, of which the following is a specification.

My improvements relate to engines driven by the explosion of a mixture of hydrocarbon vapor and air.

The object of my improvements is to adapt such engines for pumping water, and specially for fire-engines for use in situations where a steam fire-engine would be too expensive.

My invention consists in the combination, with the cylinders of the engine, which are formed with water-jackets, of a pump having its induction-pipe connected with the jacketed space of the cylinders, so that while the pump is in operation the water passing around the cylinders will keep the cylinders and pistons cool and prevent the engines from becoming inoperative by unequal expansion.

In the accompanying drawings, forming part of this specification, Figure 1 is a vertical longitudinal section of my improved pumping-engine. Fig. 2 is a plan view of the same. Fig. 3 is an end view, and Fig. 4 is a cross-section, of one cylinder of the engine.

Similar letters of reference indicate corresponding parts.

A is the frame of the apparatus, which frame may be mounted on wheels, if desired. B B are the air chambers or cylinders sustained in the lower part of frame A. C C are the engine-cylinders. D is the pump-cylinder, and *a a* are the piston-rods.

The cylinders C D and piston-rods *a* are arranged in the same manner as in the direct-acting type of steam-pumps.

To the piston-rods *a* are connected the rods *b*, that carry the slotted cross-head *c*, in which works the slide *d*, that is upon the crank of the shaft *e*. The shaft *e* is sustained in suitable bearings and carries the fly-wheel *f*.

To the rods *b* are connected the pistons *f'* of the air-pumps *g'*, that connect with the air-cylinders B, and upon the shaft *e* is an eccentric that operates the piston-rods *g* of the vapor-pumps *h*, that connect with the engine-cylinders C by pipes *i*, and by pipes *k* with the vapor or gas generators *l*.

The pump is operated by the explosion of the mixture of the hydrocarbon vapor and air in the cylinder; and such engines being well known further description in that respect is not required.

The cylinders C are each formed with an outer jacket, *m*. The space around the cylinders thus inclosed is connected by induction-pipes *n* with the common induction-inlet at *o*, and by pipes *p* with the pump-cylinder D, so that the water drawn in at *o* by the pump passes around the cylinders C before going to the pump.

*q q* are the eduction-pipes from the pump D, connected with the air-cylinder *r* and common outlet *s*. The cylinders C exhaust by the pipes *t*.

By this construction the cylinders and pistons of the engine are kept cool by the water drawn in by the pump, the water being used for that purpose before its discharge by the pump for other uses, and there is, therefore, no waste of water or power.

This form of engine is specially adapted for fire-engines, as it is always ready for use and may be worked up to full power in a moment. The only attention necessary when not in use is to see that the air in the chambers is kept up to a uniform pressure. The power is also more constant and uniform than with steam fire-engines, and by using two gas-cylinders the engine may be run without valves.

The engine may also be operated at small expense, does not require skillful engineers to run it, and the whole apparatus is light in weight and durable in form.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The pumping-engine consisting of the pump D, with piston-rods *a*, induction-pipes *n p*, and eduction-pipes *q*, the gas-engine cylinders C, provided with jackets *m*, that connect with the induction-pipes *n p*, and the air-chambers, vapor-generators, and air and vapor pumps of the gas-engine, all combined for operation substantially as shown and described.

CHARLES BURTON WELLS.

Witnesses:

WILLIAM P. YOUNG,  
JESSE C. YOUNG.