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A NEW WATER ELEVATOR.

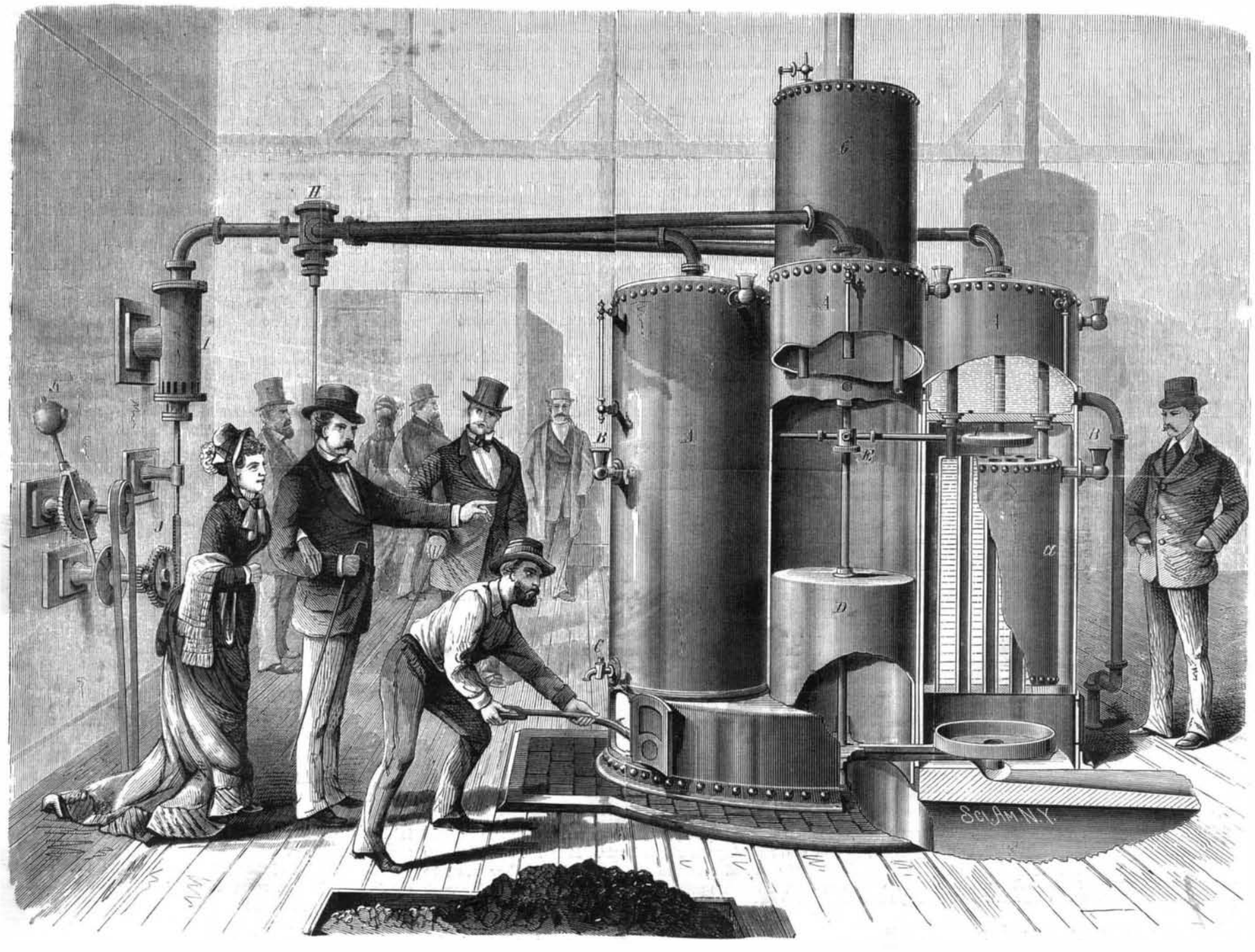
Some time since Mr. Foucault suggested the utilization of the pressure exerted by ammoniacal gas at a temperature of 100° C. in raising water economically to considerable height. Mr. H. Seyforth has constructed a machine embracing this principle, which is said to be very economical and effective. Before describing the construction and operation of this machine, it will be well perhaps to state, that while 100° C. are required to create the pressure, a reduction of temperature to 60° C. effects a reabsorption of the gas and produces a vacuum.

In the accompanying engraving the apparatus is shown partly in section, for the sake of clearness There are four generators, A, mounted on a circular base, each being provided with a filling spout, B, through which the ammonia solution is poured into the cylinder, *a*, which resembles a small vertical boiler. In the top of each generator there is a water chamber, which communicates with the cylinder, *a*, through three vertical pipes, which open above the water just under the head of the generator. The water chambers communicate with a central air chamber, G, through openings near the bottom of the chambers. A pipe, which projects from the bottom of the air chamber, G, supports a valve, E, from which radiate four pipes, each supporting at its outer end a sprinkler, F, between the cylinder, *a*, and the water chamber in the top of the generator. The stem of the valve, E, is prolonged downward, supporting near the middle a smoke drum, D, and at the lower end a four-armed spider, which carries three water pans and one fire grate. The valves, the water pans, and the grate, are arranged in such relation to each other that while the fire is under one of the generators, A, a water pan is under each of the others, and water is showered down through the sprinklers, F, upon and through the cylinders, *a*, and is received by the pans and delivered to the conduits seen below the circular base. The water chamber of each generator is provided with a suction pipe, as seen at the right, and it comnicates with a rotary valve, H, which is connected by a short pipe with a cylinder, I, whose piston actuates the valves, H E, and the spider which supports the water pans and fire grate beneath the generators. The water in the chambers in the upper part of the generators is covered with a stratum of petroleum to prevent the absorption by the water of the ammonia gas, and the piston in the cylinder, I, is covered with a layer of petroleum to prevent the leakage of gas.

The operation of the apparatus is as follows: The fire being under one of the generators, A, the ammonia gas is driven from the solution in the cylinder, *a*, through the three pipes into the water chamber, where the pressure exerted on the surface of the water, which reaches 7½ atmospheres, forces the water into the air chamber, G, whence it flows through the pipe at the top of air chamber to the place of use or storage. The water thus forced into the chamber, G, is retained by check valves. Simultaneously with the discharge of water from the generator, the piston in the cylinder, I, is acted upon by the gas pressure, and in its descent moves the gearing shown below the cylinder, I, by means of the rack and pinion, J. This actuates the weighted lever, K, which, by its oscillations, imparts through the belt an intermittent rotary motion to a shaft below the floor. This shaft periodically rotates the spider carrying the water pans and fire grate and the valves, E H. So that after the water is forced out of the water chamber of one of the generators, the fire is moved to the next, and communication between the cylinder, I, and the empty water chamber is closed, and as the water is poured down upon the cylinder, *a*, the absorption of the ammonia gas is effected and a vacuum is formed, which draws through the suction pipe to again fill the water chamber. At the same time the valve, H, is again opened, permitting the absorption of the gas contained by it, thus producing a vacuum that draws the piston to the top of the cylinder preparatory to another descent, which takes place as the cylinder is placed in communication with the next generator in order. The fire is carried under the generators one after another in regular rotation, and while it rests momentarily under one of the generators, the others are being cooled by the shower of water from the air chamber, G. The smoke and steam pass into the drum, D, thence downward into the chimney flue shown at the bottom of the cut.

It is stated that, taking everything into consideration, this water elevator compares favorably as to efficiency and economy with the best pumping apparatus now in use, while its simplicity and manageableness are strong points in its favor.

A CLOCK is being exhibited at Paris which fires a shot every hour. Somebody says that its great practical utility is "to kill time."



WATER ELEVATOR OPERATED BY AMMONIA