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THE BERRYMAN PATENT FEED WATER HEATER.

It is commonly supposed by engineers and by users of condensing steam engines the boilers of which are fed from the hot well, that there can be no advantage gained by employing exhaust steam on its passage from the cylinder to the condenser. The manufacturer of the improved feed water heater represented in our illustration claims, however, that this device, which utilizes exhaust steam, does so with notable economy, and he presents the following facts, which he informs us he is prepared fully to substantiate. It is hardly necessary to point out that the savings indicated are large, and that any auxiliary apparatus capable of securing them may be commended to the especial attention of steam users.

The saving over feeding the boiler direct from the hot well is stated to be, in fuel, from 6½ to 8 per cent, and as compared with the conditions when cold water is delivered to the boiler, the economy is said to be from 10 to 13 per cent.

The heater does not interfere with the vacuum and requires no care. While it does not, in connection with a condensing engine, act so well as a purifier as it does in connection with the high pressure engine, yet, we are informed, it removes the greater part of the impurities contained in the feed water. The reason the purifying results are not the same as when connected to a high pressure engine is that perfect separation of impurities does not take place till the water in the heater is raised to 186° Fah. Exhaust steam from an engine working high pressure is 212° Fah., and this, passing through the heater, raises the water in it to 210°. The same exhaust steam from an engine working low pressure (or condensing) is (on its way to the condenser) reduced to 163½ Fah., and passing through it does not raise the water in the heater above 85° Fah. It is claimed that the water and the steam passing through the Berryman heater are raised to 150° Fah., equal to 6½ per cent in fuel consumption (10° in feed water being equal to 1 per cent saving in fuel consumed).

The manufacturer further states that if the condensing water be salt, so that it cannot be used to feed the boilers, and the latter are hence necessarily fed with cold water at 40° Fah., the heater will then raise the feed to 150°, equal to 11 per cent saving.

The Berryman heater is manufactured in the United States only by I. B. Davis, Hartford, Conn., to whom all communications should be addressed.

A Hot Water Fountain.

The city of Pesth has almost accomplished the task of obtaining an unlimited supply of nearly boiling water, which will be available for public and private use. The ready heated fluid is obtained from a deep artesian well, from which, when completed, the water will issue in a mighty fountain, to the height of nearly fifty feet. The deepest artesian well in the world has hitherto been that at Paris, which measures 1,794 feet in depth. The Pesth well has already attained a depth of 3,120 feet, and will, when bored the required depth, more than double the depth of its Paris rival. The water now issuing from the bowels of the earth, three fifths of a mile below the surface, has a temperature of 161° Fah., and the work will be prosecuted until a warmth of 178° Fah. is obtained. The meaning of these figures will be better understood when it is remembered that the temperature of a hot bath is 98°, while that of boiling water is 212°. The daily supply is already 175,000 gallons, a quantity which will be greatly increased at the enhanced depth. The work progresses at the rate of 50 feet a month, and recent improvements in the mechanical appliances render possible a still more rapid rate of working. This remarkable under-

taking is being carried on partly at the expense of the city and partly at the expense of the engineers, Messrs. Zsigmondy.—*Building News.*

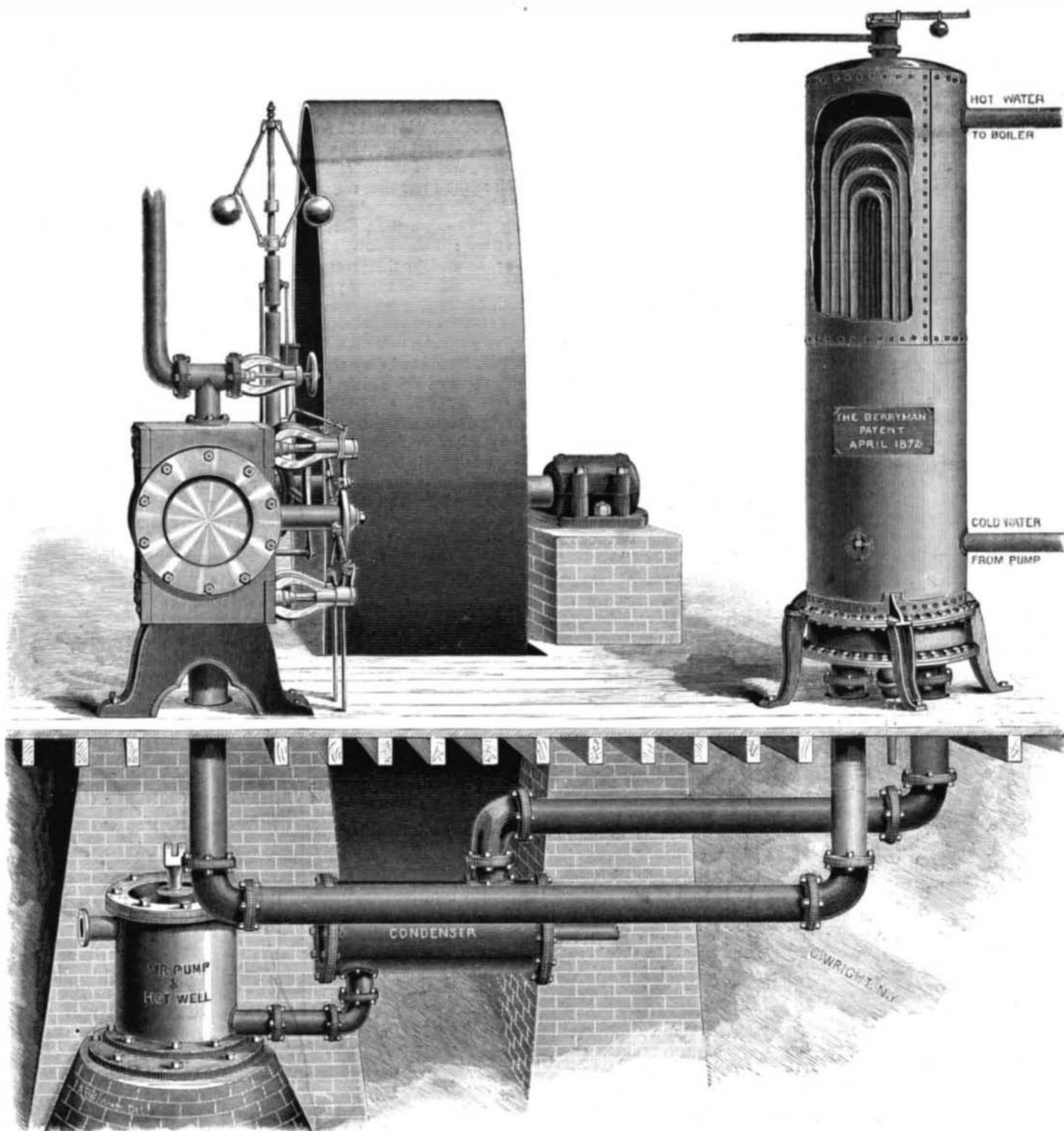
Flooding the Desert of Sahara.

Mr. Donald Mackenzie, at a recent meeting at Bradford, described his scheme for forming a canal across the Great Desert. Of the vast plain or hollow in the desert, known as El Juf, the greatest length of the depression is about 500 miles, the breadth about 120, and the area about 80,000 square miles. This vast area is depressed about 200 feet below sea level. This depression was formerly connected with the Atlantic Ocean by the channel Sakiet El Hamra, or Red Channel, which had in process of time been blocked up with sand. It was proposed to reopen this channel and let in the sea, which would cover the great area above described and enable commerce to be carried on with places in the interior, rich in produce of various kinds. The submerging of the basin of El Juf would open up a navigable highway for the commerce of the world to the heart of Africa, and present an extensive field for the influence of civilization.

Artificial Rubies.

The production of crystallized alumina in the form of corundum, which is the substance of a number of oriental gems, and especially of rubies and sapphires, has engaged the thoughts of several experimenters, but hitherto only microscopical crystals have been produced.

Two Frenchmen, MM. Freymy and Feil, have lately succeeded in obtaining specimens which may be used in watch-making, and may be cut by the lapidary. Their method consists in heating for a long time at a red heat a mixture of aluminate of lead and silica. Thirty kilogrammes of the mixture were thus treated for twenty days. The alumina is gradually liberated, and crystallizes. It thus gives colorless corundum, but if two or three hundredths of bichromate of potash be introduced into the mixture, this acquires the color of rubies. With a little oxide of cobalt the sapphire is obtained. The reproduction is exact as regards density, hardness, brilliancy, color, and even, as M. Jannettaz has observed, crystallographic and optical properties.



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