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COMBINED REGULATOR AND ALARM.

Competition in the different branches of manufacturing throughout the country has caused steam to be almost universally adopted for the motive power. A great deal has been accomplished in economizing the use of steam by the adoption of regulators, cut-offs, and other patent appliances, but there is great loss in the use of steam. No better field for inventors is now open than that for improvements in steam engines and boilers.

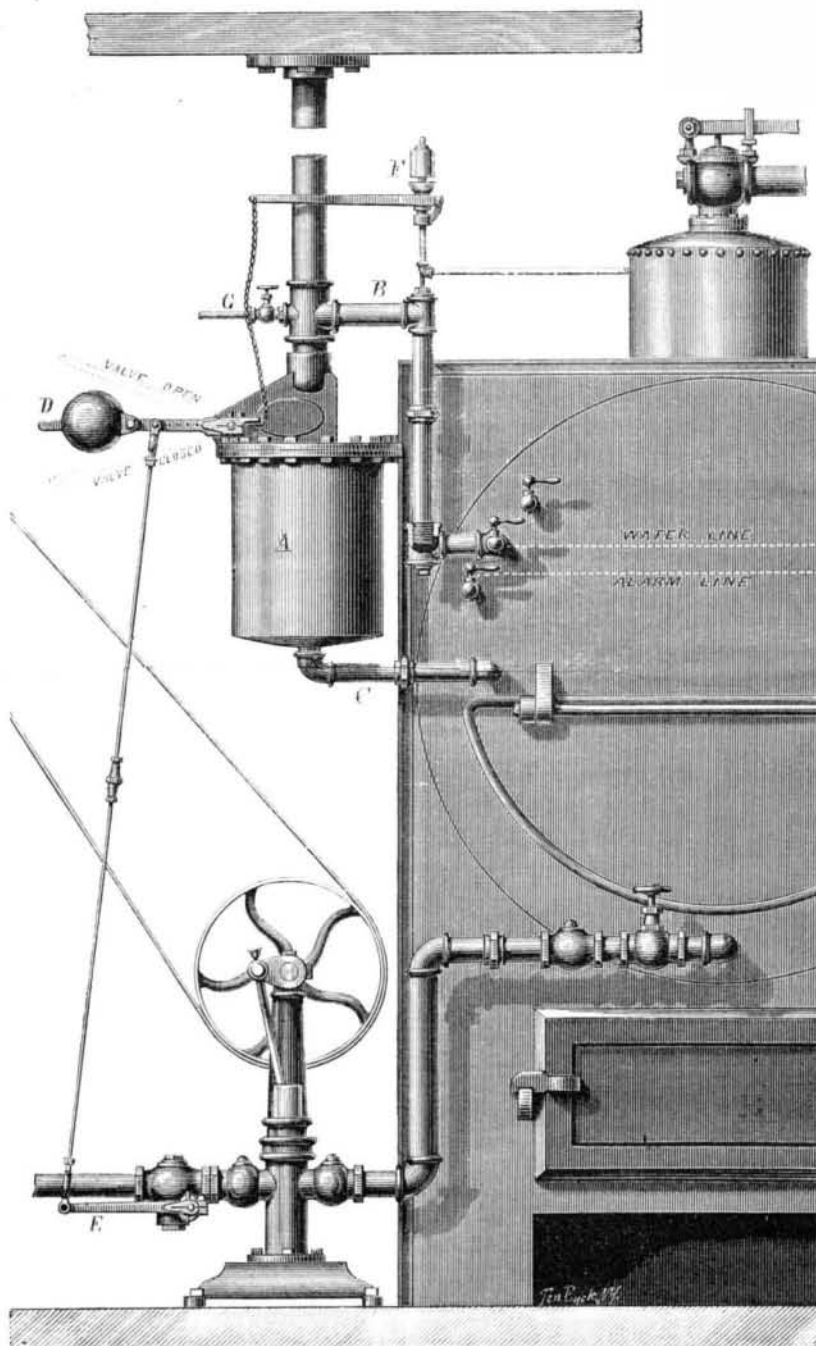
Thousands of boilers are being supplied with water only partially heated, while coal is being consumed and the heat exhausted in the atmosphere. And the irregularity with which some are supplied with feed water causes undue wear and unnecessary expense for fuel and repairs.

The machine now illustrated is designed to overcome some of the above difficulties by regulating the supply of water, feeding the boiler in quantities equal to the amount being evaporated. It is also constructed in such a manner that if, by any means, the source of supply to the boiler is stopped, a whistle will blow gradually and, as the water evaporates, the sound will increase until a loud alarm is given. It is the invention of R. Berryman, of Hartford, Conn., whose feed water heater was lately illustrated in these columns. For a sectional view of the machine now shown, we refer our readers to our issue of September 14th, where the same appliance is shown as a steam trap. We now represent it as applied to a steam boiler. The bottom of the cylinder, A, is set 6 inches below the feed or true water level, and the pipes, B and C, connect the interior of the machine with the interior of the boiler, B connecting the top of the cylinder to the feed line, while C is connected at any convenient point below the water line, and conducts the water back to the boiler at each change. In the casing, A, is a bucket which is suspended from one end of a lever; the other end has a square cast in it, which fits a corresponding square on the rock shaft, one end of which extends through a stuffing box. To this end the lever, D, is fastened by a dowel pin and a clamp. The lever, D, through its connecting rod, controls a valve in the steam pipe of a steam pump, or, as represented, the inlet valve of a plunger pump; it can also be used in all cases where the water pressure used to feed the boiler is greater than the requisite steam pressure.

Its operation is such that, when the boiler is supplied with water so as to cover the inlet of the pipe, B, on the feed water line (steam having been raised, and the air blown out through the lock on top of the casing, A), the casing will be at once filled with water. The bucket inside being thus submerged, the weight of water displaced by it will be given in power to the counterbalance on the lever, D, moving it down, thereby fully or partially closing the supply valve, which valve is adjusted by the right and left screws on the connecting rod. When the water in the boiler has evaporated to a level below the inlet of the pipe, B, on the feed line, steam enters, filling the upper part of the casing, A, and permitting the water above that line to flow back by gravity through the pipe, C, to the boiler. The water having thus resumed its level, the bucket falls to its former position, moving the counterbalance and lever, D. The latter rises, and the supply valve is again opened. Should the supply of water be stopped or so reduced that the water evaporates faster than it is supplied to the boiler (the water level being the same in both the cylinder, A, and the boiler), as the water evaporates the bucket falls with it until the short end of the lever, D, opens the alarm whistle by means of the connection. The connection can be lengthened or adjusted so that an alarm may be given at almost any desired point below the feed line. The gradual increase of whistle sound is such that ample time is given to avoid an alarm, provided water is supplied in proper quantity.

The hollow globe regulator, also an invention of R. Berryman, is favorably known and in general use. Yet we are informed by him it has been impracticable to get two separate movements of the same apparatus at different intervals of time, consequently it has been necessary to use two machines. The combined machine will work equally well on a number of boilers supplied by one pump, the connections of which will be more fully explained in our next issue. The great object of this appliance is to maintain water in a boiler at a uniform level. If a steam boiler be filled with water beyond

its proper level, so that the steam space is reduced, and at this time the engine is using steam as fast as it can be generated, the result is, in many cases, water coming from the surface, impregnated with grit, is drawn in small quantity into the steam cylinder, the disastrous result of which, from cutting, is well known; and the deterioration of the inner surfaces of cylinders, of pistons, and the wear and corrosion of slide valves and slats are all promoted by the passage of water through the slide valves, even when no solid matter is carried over; therefore the importance of keeping only a proper quantity of water in the boiler cannot be overestimated. The Berryman Manufacturing Company, of Hart-



BERRYMAN'S COMBINED REGULATOR AND ALARM.

ford, Conn., make a specialty of steam and its economical and safe appliance, and further information concerning their productions may be obtained of J. B. Davis & Co., agents of the same city.

The Agassiz Expedition.—Discovery of Immense Glacier Beds in South America.

Professor Agassiz has nearly finished his famous voyage of deep sea explorations, the steamer Haesler with the scientific party having lately arrived at San Francisco. The full details of the voyage and of the discoveries made will be of much interest. Many thousands of new and valuable specimens of natural objects have been obtained and preserved.

In a recent letter to Professor Pierce of the Coast Survey, Professor Agassiz mentions the overland journey that he made in Chili, from Concepcion northward to Santiago, the route travelled lying between the Andes and the high hills of the Pacific Coast. "There is," he says, "a broad valley between the Andes and the coast range, the valley of Chillan extending from the Gulf of Ancud or Port Montt to Santiago and farther north. This valley is a continuation, upon somewhat higher level, of the channels which, from the

Strait of Magellan to Chiloe, separate the islands from the mainland, with the sole interruption of Tres Montes, which gives the clue to the whole, as we have here in miniature a valley between the Andes and the coast range. Now this great valley, extending for more than twenty-five degrees of latitude (1,300 miles) is a continuous glacier bottom, showing plainly for its whole length that the great southern ice sheet has been moving northwards in it. I could find nowhere any indication that glaciers descending from the Andes had crossed this valley and reached the shores of the Pacific.

An Attempt to Swim the English Channel.

The English sporting world has been greatly interested by a wager, of \$5,000 against \$150, that J. B. Johnson, the "hero of London Bridge and champion swimmer of the world," could not swim the English Channel, from Dover, England, to Calais shore, France, distance 19 miles. But owing to the strong tidal currents in the channel, the actual swimming distance was estimated at between forty and fifty miles.

Johnson is described as twenty-four years of age, of medium height, and one of the finest built men it is possible to see. He measures forty-five inches round the chest, and at will can inflate it to about five more; his muscular powers are also enormously developed. The terms of the bet did not allow of his coming out of the water, consequently, although his abilities as a swimmer might have enabled him to accomplish the distance, it was thought, and it afterwards proved, impossible to keep up the circulation of the blood for so long a period.

On the appointed day, August 23d, a large concourse of people assembled on the Admiralty pier, at Dover, to witness the departure of "the hero." For an hour or so, he entertained the audience by diving from the bow of a steamer and performing various aquatic feats; after which, in company with a party of friends, he embarked on the steamer Palmerston to begin his exploit of swimming across to France.

When some 200 yards from the pier, Johnson ascended to the paddle box, tremendous cheers greeting his appearance. He then dived, the time being 10:40 A. M., and striking out to sea with vigorous strokes, accomplished the first two miles in thirty minutes. The wind was moderate from east-north-east; a strong tide was also running, with a short chopping sea. At 11:20 he partook of port wine, and again at 11:30 refreshed himself. At 11:45 he approached the steamer and requested something to eat, asking whether he might come on board. Mr. Strange, seeing that in consequence of the strong tide, etc. his chance of reaching the French coast was quite hopeless, thought it advisable he should do so. When assisted on deck it was found that his legs, from the thighs downward, were numb; the circulation of the blood seemed to have almost stopped—in fact, the cold had so thoroughly mastered the system that he was unable to raise a basin of beef tea to his lips.

THE practice of dentistry can hardly be included in the modern arts; for as early as 500 B. C., gold was used for filling teeth, and gold

wire was employed to hold artificial teeth in position, and does not seem then to have been a new art. A fragment of the tenth of the Roman tables, 450 B. C. has reference to the burial of any gold with the dead except that bound around the teeth. Herodotus declares that the Egyptians had a knowledge of the diseases of the teeth and their treatment, 2,000 B. C. In Martial, Casseilus is mentioned as either filling or extracting teeth; but he specified that he would not polish false teeth with tooth powder. Lucian mentions an old maid that had but four teeth, and they were fastened in with gold. These facts cover a period of 600 years.

A NEW and profitable branch of business, it is said, has been invented and put into practice in Georgia. There is an enterprising man in Whitefield county who sprinkles salt on the railroad to allure cattle upon the track. The animals are killed by the trains, and the railroad company has to pay for them. The owner has the beef and hide for his profit.

AN iron church has lately been completed in Brooklyn, N. Y., having seats for 3,000 persons. It is said to be an elegant structure.