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IMPROVED BOILER CLEANER AND MUD EXTRACTOR.

In the accompanying engraving we illustrate a novel device for the immediate removal of mud and sediment of all kinds, as fast as the same is separated from the water in steam boilers. The impurities are thus given no opportunity to deposit or adhere, and all formations of scale or accumulations of mud, so destructive to boilers and prejudicial to their economical use of fuel, are consequently, as it is claimed, prevented, as is the evil of foaming.

The illustration represents the device applied to a return tubular boiler. A is a box or reservoir, located above or upon the arch wall of the boiler. In marine boilers the reservoir may be suspended from the deck frame above. From this reservoir three pipes extend; the first pipe, B, enters the rear part of the top shell of the boiler or generator, and is connected with a horizontal pipe, which is adjusted a little below the water line. At either end of this horizontal pipe is an enlarged mouth, C, partly submerged, but extending a little above the surface of the water, the mouths being of a diameter to allow several inches variation in the water line. The second pipe, D, leading from the reservoir, A, enters the other end of the boiler in similar manner, terminating below the water surface. When the boiler is heated, a constant current of water is immediately established through the bell mouths, C, and pipe, B, filling the reservoir, A; and, cooling to a certain extent, it returns to the boiler by the pipe, D. It will be observed that the up flow pipe is placed about midway between the fire bridge and the back end of the boiler, at a point where the water is presumably hottest. On the other hand the down flow pipe enters the front or cooler portion of the water; and while the water may rise and fall in the boiler to any moderate extent, the enlarged mouths, C, will constantly maintain a current (free from steam) from the surface. As the sediment and impurities are chiefly separated from the water by ebullition, in that part of the boiler where the horizontal pipe, C, is located, they are immediately drawn in by the current and carried into the reservoir, A; here the current, weakened by expansion, can support the impurities no longer, and they settle in the reservoir, and are retained until blown off through the third pipe, E, as seen in the engraving. The reservoir may be located at any desired point above the level of the water line, as most convenient, and occupies no appreciable room. It usually holds about three gallons of water.

The invention has now undergone tests for over two years, and is claimed to have proved its efficiency, numerous testimonials from the many practical engineers in Canada and mill men on the Saginaw river, as well as owners of steamboats plying on that turbid and saline stream, bearing witness to that fact.

For fire box boilers it is well adapted, preventing, we are informed, all accumulations of sediment in the water legs; while after four week's run, no sediment has been found in the boiler, the old scale meantime becoming loosened and dropping off. The invention is applicable to all kinds of boilers, single or in batteries.

Patented August 17, 1875. For further particulars address James F. Hotchkiss (owner of the patent), Bay City, Mich. Patent for Canada sale.

THE PUTNAM MACHINE COMPANY'S STEAM ENGINE.

The engine represented in the accompanying engraving was exhibited at the Centennial by the Putnam Machine Company, of Fitchburg, Mass. It is so constructed that the steam is admitted to the cylinder at full boiler pressure and

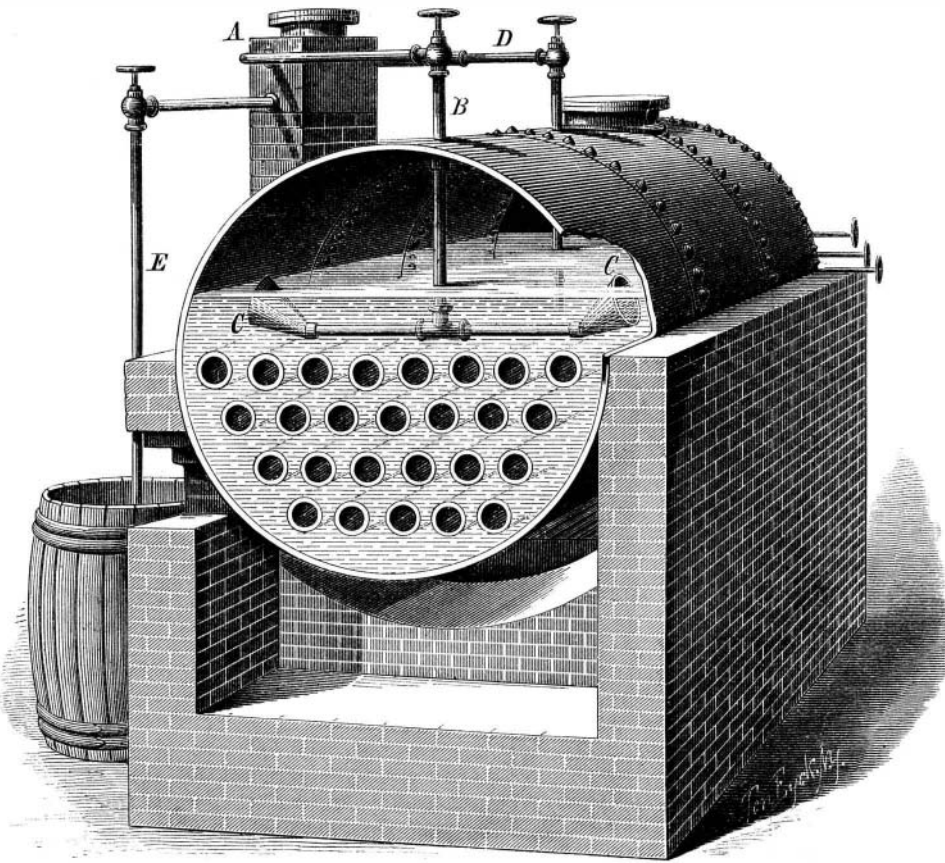
at any point of the stroke, the point of cut-off being regulated by the governor, which is claimed to enable the engine to maintain a uniform rate of speed, notwithstanding variations in load or steam pressure. The valves are of the poppet order, and are self-balancing. Cut gears upon the fly wheel shaft operate a horizontal shaft beside the engine frame, and upon this shaft are cams which raise the valves at the beginning of the piston stroke. The length of time during which the cams hold the valves open for the admis-

of excellent workmanship throughout. For further particulars address the manufacturers as above.

A Snake Show at Calcutta.

"It was early in the morning—not, however, before the snakes, which were in a series of wire-covered boxes, were awake and lively—that we were shown," says a correspondent, "into a stone-floored room some twenty feet long and twelve broad. In the boxes were the strongest and deadliest snakes in India: pythons, ophiophagi, cobras, korites, Russell snakes, and many others. The Hindoos who had charge of them were two slim, wiry, little men, nude to the waist, as most of their countrymen are. They wore neither gloves nor had any other protection, and had no instrument of any kind in the place. After showing the varied collection under their care, they proceeded to open the python cage, and one of them, putting his head in, seized a monster serpent and threw him upon the floor close to our feet. The python objected to such treatment, and began to hiss, making at the same time a vigorous effort to rise. But the snake-keeper was waiting for this, and no sooner did that huge, shining back begin to curve than the keeper put out his hand, and, seizing the creature's tail, pulled it back with a jerk. Instantly the python was powerless—hissing, but unable to move; the more he struggled, the more tenaciously did the keeper hold his tail, explaining meanwhile that so long as the reptile was controlled in that fashion there was no danger of its doing mischief; then, just as its rage was becoming ungovernable, the man lifted it quickly, and with a jerk deposited it in the box. Its companion was taken out in a similar manner, and slapped and buffeted till, throughout its entire length, some twelve feet, it quivered with passion, but all to no purpose; it, too, was released, and shut up to his leisure. The fact that an ophiophagus is in the Regent's Park Zoological Gardens, London, rendered the next exhibition more interesting, although it may be doubted whether the sudden throwing into so small a room of a snake seven feet long was agreeable to the visitors. However, there was really no danger, for the venomous creature was so completely in its keeper's

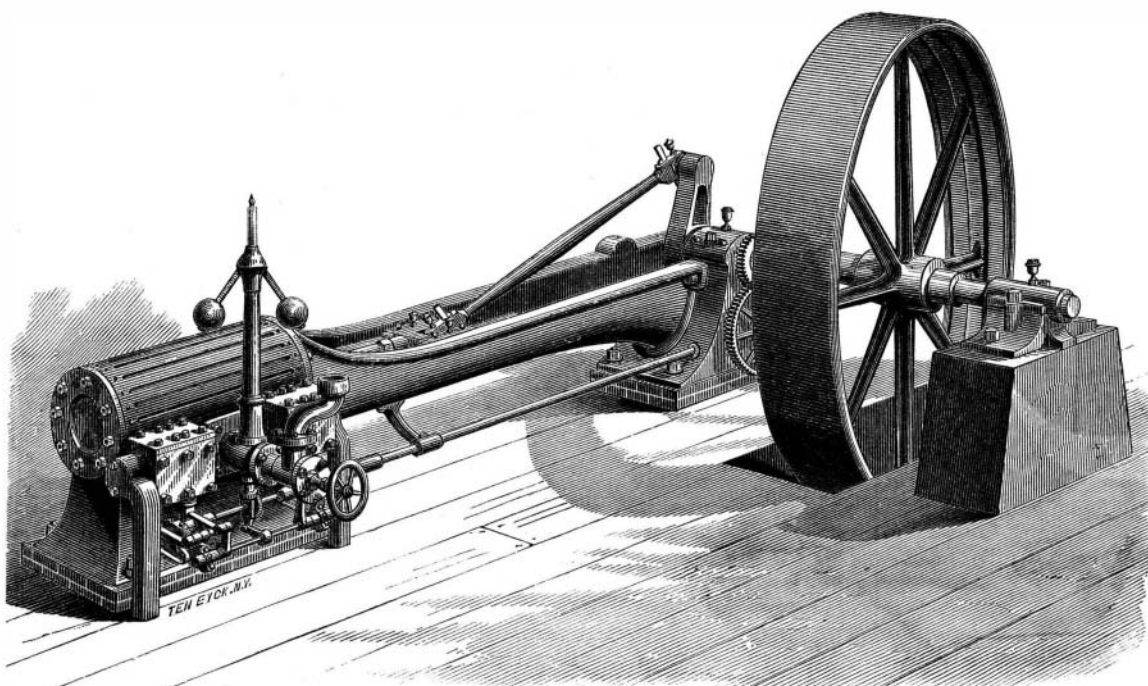
power that we had no occasion to fear. One bite from the reptile, and any one of us would have been dead in five minutes, for it was exceptionally strong and lively; but it was no more able to bite us than the little mongoose caged outside the door. Up rose its head, out came its slithering tongue, its eyes dilated, its huge throat swelled, and all seemed ready for a desperate attack, when the keeper struck the reptile's mouth with the back of his hand, and, before it could strike him, had seized it just under the head. Then it struggled, but only to get away—it had met that native before, and did not at all approve of his treatment. Its tongue might move in and out as often as it pleased, but all to no purpose; and when the cage was opened, it slunk in."



KEMP'S BOILER CLEANER AND MUD EXTRACTOR.

sion of steam is regulated from the governor direct; and the valve-closing mechanism is so arranged that, no matter at what point of the piston stroke the cut-off takes place, it is done very rapidly and without shock. In the steam chests the upper and lower seats of the steam and exhaust valves are placed so near together as to leave only the requisite area of steam passage between them: thus reducing any li-

placed in the cage, and shut up to his leisure. The fact that an ophiophagus is in the Regent's Park Zoological Gardens, London, rendered the next exhibition more interesting, although it may be doubted whether the sudden throwing into so small a room of a snake seven feet long was agreeable to the visitors. However, there was really no danger, for the venomous creature was so completely in its keeper's



THE PUTNAM MACHINE COMPANY'S STEAM ENGINE.

ability to derangement from a difference in the expansion of the parts. By the removal of one cover, each valve may be withdrawn without separating the valves from the valve stem. The working parts of the valve mechanism are of hardened steel. The frame of the engine is truncated, and provision is made so that the pillow block can be changed to either side of the bed. The engine at the Centennial was

the formula for Dr. Ferrier's new remedy for cold in the head. As the season for that distressing malady is at hand, we print the recipe, which is: Trisnitrate of bismuth 8 drachms, pulverized gum arabic 2 drachms, and hydrochlorate of morphia 2 grains. This is used as a snuff, creates no pain, and causes, says the London *Lancet*, the entire disappearance of the symptoms in a few hours.