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New Cornish Engine.

The Philadelphia *Ledger* describes a new "Cornish Engine," built in that city for the Camden Water Works. This engine has a cylinder of 40 inches and a pump of 22 inches, the stroke being 8 feet. The boilers consist of a horizontal boiler, extending over the furnace in the usual manner; the bridge wall at the back of the grate bars is built up so as to throw the main body of the heat against the boiler, but allowing a portion to be carried over this wall to act upon a second lower boiler or heater suspended behind it, and connected by pipes with the main boiler. The water is introduced into the lower boiler, and consequently does not enter the upper one until heated to about 212°. This preserves the upper boiler from any sediment, all extraneous matter being deposited in the lower boiler, from which it can be easily removed. The heat which is usually carried off by the draft and wasted, is made to act upon the lower boiler, so that the heating of both requires no more fuel than for one of ordinary construction.

Improved Steam Valve.

The accompanying engraving is illustrative of an improvement in valves, which forms the subject of a patent granted to Mr. Jas. McNab and Mr. Adam Carr, of New York City, Jan. 15, 1856. Fig. 1 is a perspective, and figs. 2 and 3 sectional views.

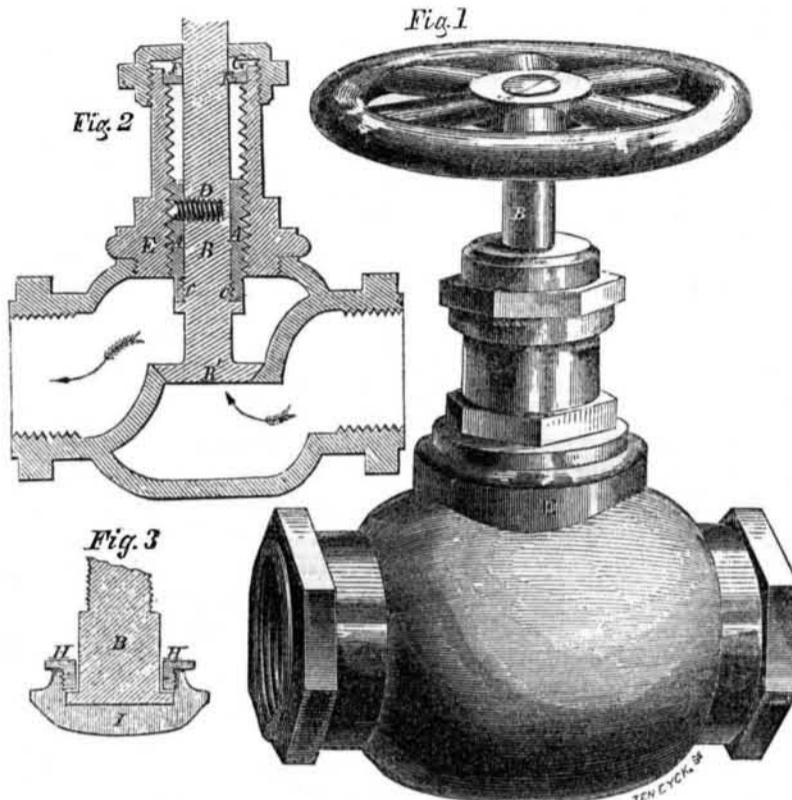
In external shape this valve is the same as those in common use. The improvement consists in a new arrangement of the valve spindle, which permits on easy re-grinding of the valve when it becomes leaky. Ordinary globe valves are very extensively used, but they are subject to two serious objections; first, it is seldom that they are perfectly tight when new, and second, it is extremely difficult to grind them out, after they have become once leaky, and the leak all the time increases. Indeed, when a valve gets out of order, it is frequently considered cheaper and better to remove the same, and substitute another, than to attempt any repair.

Referring to the engravings, A A is an outer shell slipped over the valve spindle, B, and attached to the latter by means of the screw threads at C C; the small screw, D, is inserted for additional security.

To re-grind this valve it is only necessary to unscrew the top piece, E, run the spindle, B, down, so as to clear it from E, remove screw D, separate the spindle from shell C, and then return the spindle, B, to its place, and restore the piece, E. Thus changed, the spindle will be loose within the shell, A, and may be revolved *ad libitum*, and the valve, A, ground out in its seat with emery.

A perfectly tight joint may thus be obtained in a very short space of time, and the parts be again returned to their original position, ready for use. The re-grinding, it will be observed, is done without removing the valve box from the pipe, so that there is no pipe soldering, brazing, or jointing to be attended to. The improvement, it is evident, effects a great saving in time, labor, and trouble.

IMPROVEMENT IN STEAM VALVES.



This improvement may be used in connection with fixed or loose valves with equal facility. In fig. 3, B is the spindle, I loose valve, H screw nut on valve. Between the nut, H, and the top of the shoulder, on spindle B, a washer is placed, which renders valve I loose upon the spindle; remove the washer, and nut H may be screwed down tight upon the shoulder, and thus bind and hold I, like the fixed valve, so that it may be ground, as described. B' is firmly attached to the spindle, B, but between the valve and the shoulder just above, there is sufficient space to allow the attachment of a loose valve, if preferable. Both kinds of valves are manufactured by the patentees, and both may be ground out with the same convenience.

The stuffing box in the above valve deserves

notice. It is improved by the insertion of a collar, F, at the bottom of the box, and thus a perfect chamber, G, is formed, for the reception of the packing above the top of the interior screw. In the old valves the packing is liable to fall down into the screw thread, and impede the action of the valve. The present improvement effectually obviates that difficulty.

These valves, we are told, are rapidly coming into use. Being much superior to the common article, and costing about the same price, they will, eventually, drive out the old-fashioned kind, to a great extent. The inventors are now manufacturing a variety of sizes at their works, No. 133 Mercer st., New York, where any further information respecting the patent can be had.

of the bolts will simultaneously move, and carry their respective jaws. The jaws may, in this manner, be rapidly run up to gripe an article, and then each screw bolt may be separately tightened by the wrench; all back lash is thus taken up, and the gripe will be fixed with great force.

Another advantage of this method of moving the jaws is, that the threads of the screw bolts can be made coarser, and therefore stronger, while the coarse thread enables them to be run up more rapidly.

In most chucks the face plate is slotted from the periphery up to the center, in order to receive the jaws; and the plate being thus divided, is rendered weak; in the present improvement the slots on the face plate radiate from the center, outwardly, but do not extend to the periphery; greater strength is thus obtained. An opening is made in the center of the chuck for the introduction of the jaws, and after they have been inserted, a plug, E, is put in and secured, flush with the face plate. The inner ends of the screw bolts, C, bear against plug E, while their outer ends have bearings on the rims of the groove, in which the rack, F, moves; the force of the screw bolts, C, is thus expended against solid metal, in both directions, and the bolts cannot get out of place. G are bosses to support the shells; screws, G', pass through the bosses and hold the shells together.

The rims of the groove in which the rack, F, rotates, fit together tight, and completely enclose the rack and spur wheels, so that dirt and filings are prevented from entering to do injury.

In other chucks, it is common to make the jaws, B, of two pieces, bolted together; thus formed they are weak, and after a time become useless; this objection does not exist in the above invention, as the jaws are entirely solid.

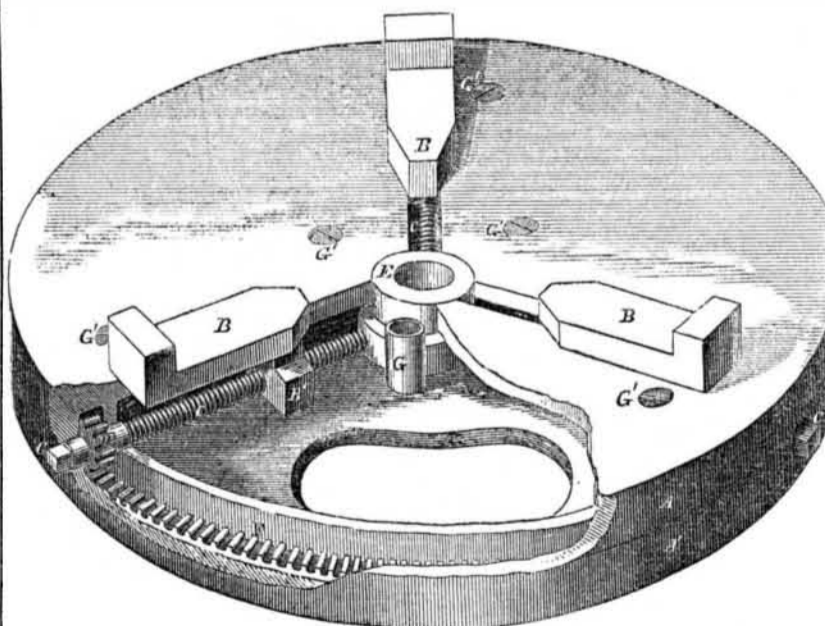
The foregoing improvement appears to be one of a very simple, strong, and useful character. It is the invention of Mr. Eli Horton, of Windsor Locks, Ct., who will be happy to give further information. Patented Nov. 13, 1855.

Chlorated Silver.

M. F. Kuhlmann, of Paris, has recently communicated to the Academy of Sciences a process which he has discovered for the formation of chlorated silver by the humid way. He fills a bottle or globe with a solution of nitrate of silver, and closes the orifice with some porous body; the bottle is reversed, and the orifice plunged in a bath of chlorohydric acid—taking care that no air penetrates into the bottle containing the solution of nitrate of silver—in such manner that the porous stopping may have one side in contact with the solution of nitrate of silver and the other in contact with the chlorohydric acid. After a short time the two fluids meet; and then there is formed on the top of the stopping, inside the bottle, a thin layer of chloride of silver precipitated. The re-action is continued slowly, and gives rise to an arborization of chloride of silver. The chloride is first white, and afterwards becomes of a brownish violet hue, and semi-transparent. The fracture is conchoidal and vitreous, it is of a soft consistency, and as fusible as ordinarily found chlorated silver. M. Kuhlmann infers, from this discovery, that as native chloride of silver is often found with metallic silver the formation of this metal results from the reduction of a portion of the chloride; for it has long been well known with what facility chloride of silver gives up its chlorine to hydrogen, as the latter is evolved.

The late Kentucky Legislature fixed the weight of a bushel of bituminous coal at eighty pounds, whilst that of canal coal has been reduced to seventy pounds.

IMPROVED LATHE CHUCK.



Improved Lathe Chuck.

In this improvement there is a circular, hollow shell, composed of two pieces, A A', combined together like the shell of a door lock. The jaws, B, between which the article to be held in the lathe is placed, slide to and from the center of the chuck. The jaws are made of solid pieces of metal; they have pro-

jections, B', on their lower sides, in which projections nuts are cut to receive the screw bolts, C. By turning these screw bolts the jaws, B, are moved in or out. The outer ends of all the screw bolts, C, are furnished with spur wheels, D, which mesh in the circular rack, F; if a wrench is applied to the square head of either one of the screw bolts, C, all