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Improvement in Steam Generators.

C. H. Gould's improved steam boiler, patented April 30, 1867, combines all the good qualities of the best boilers in use, occupying but very little room, and can be safely located upon the working floor of any store, warehouse, or manufactory.

In the illustration the boiler is shown divided in the plane of its axis into two equal parts, of which Fig. 1 is an interior and Fig. 2 an exterior view.

A, is a cylindrical vessel open at the top and closed below by bottom, B, supported a short distance above which bottom is a grate, C, so as to form an ash pit, D, and a fire chamber. E. F is a vessel larger than, but of similar shape to the vessel, A, which it surrounds concentrically, so as to form a water jacket, F', between them; and the two heads, B and G. H is an annular plate which joins the upper edges of A and F, so as to close at the top the annular space or jacket, F' between them. J, is a drum-shaped chamber which is supported a short distance above and connected with the water jacket, F', by means of a series of short pipes, K. The bottom, M, of the drum, J, constitutes the crown of the fire chamber, E, while the top or head, L, of the drum constitutes the crown of the steam space. The flat plates, B G L M, are suitably stayed by bolts, such as are represented at N. All its parts being cylindrical in form, can be easily made to resist any desired pressure.

The bottom, M, is joined to the cylindrical vessel, P, at the top, which vessel is joined at the bottom by ring, O, to cylindrical vessel, R (or outside shell of boiler), the two forming water jacket, I. The water jackets, I and F', are securely stay-bolted as represented.

The pipes, m m, connect the inner and outer water jackets at the bottom, as the short pipes, K, connect them at the top. X is a man-hole into the steam chamber, and W is a hand-hole into the lower water chamber.

The parts above described constitute the boiler proper, which rests at O O on iron bed plate, S, which in turn rests on masonry, T.

The outside waterjacket between cylindrical vessels, R and P, and the inner water jacket between cylindrical vessels, A and F, form the descending flue, Q, which, in connection with the opening, U, through the center bed plate, S, communicating with horizontal flue, V, makes the entire smoke circuit, and thus obliges all the flame and heat to converge at a point immediately under the center of the boiler, completely enveloping the inner water jacket before their final exit. The central aperture through bed plate, S, is occupied by an opened cylindrical damper, 3, which serves to restrict the draft or shut it off altogether, and by its operation compels the heat in passing to hug the bottom of the boiler. The feed-water pipe, which enters the boiler at G, passing up through the smoke flue, serves as a guide for the damper.

It will be readily seen that a very large plain vertical generating surface is obtained in this form of boiler; also that the bottom of the steam chamber (the water line being some inches over it) affords a large surface for the direct action of the fire; that the most intense heat is where it is wanted, and that as it diminishes, passing off downward, it approaches in its final exit the bottom of the boiler where the water is thrown in; that it has no confined or horizontal smoke passages, and therefore any kind of fuel can be used and the generating surface kept clean; that the direction of the flues is such as to form an inverted air chamber for the heated air and gases, which can only pass off as they are forced by the draft; that the hottest part of the smoke and gases is thrown in contact with the hottest part of the generating surface, and that the generating surface will at no point return or give back heat to the smoke.

More than a year's use of this form of boiler proves that all the dust or sediments in the water settle on the bottom, G, except a small portion in the water jacket, I, at O, both of these parts being the furthest removed from the fire, and not liable to be burned that it is a very rapid generator of steam,

and will make as much steam from the fuel as any form of boiler that has water space enough to be safe.

Y, in Fig. 2, is an outer shell or case of "galvanized" iron, having between it and the outer shell of the boiler a narrow air space for the purpose of controlling the radiation, making it doubly secure as to fire, besides giving a neat outside finish. This engraving also shows the outside appearance of C. H. Gould's patent water regulator, with the conducting pipe from reservoir to stop, g, and pipe, f, leading to the forcing pump. An ash spout, h, leads to the ash chamber formed by the foundation walls of the boiler. A boiler of this construction 52 inches in diameter and 6 feet high is found amply suf-

ficient for ten horse-power. The knob or handle being of wood is never too warm for the hand.

This cup is intended especially for tallow, which is greatly preferred to oils for lubricating engine cylinders. When oil is subjected to the heat of "live" steam it is frequently decomposed into its components of glycerin and acids, and loses its value as a lubricator, while tallow, requiring a greater heat for its decomposition, gradually melts and passes into the steam chest and cylinder in the form of a liquid lubricator. The bottom of the cup is pierced with a number of small holes, surrounding the steel spindle, which open into the passage through the gate.

The whole device is very simple in its parts and does not appear liable to get out of order. It is also ornamental in form and finish and seems to be well adapted to its uses as a steam cylinder lubricator.

Patented by F. Lunkenheimer who can be addressed at the Cincinnati Brass Works, Nos. 10 and 16 East Seventh street, Cincinnati, O.

A Novel Propeller.

A few days ago we examined the construction and observed the operation of a small working model of a propeller on a plan quite unique. It consists of three vertical blades placed equi-distant around an upright shaft at the stern of the vessel, the lower end of the shaft working in a step on the prolongation of the keel. The shaft by which the blades are driven works inside a hollow shaft, on which is secured a horizontal eccentric, which connects by arms with the blades, and feathers them as they rotate. No rudder is used with this propeller, the set of the eccentric and blades, by means of a lever, determining the line of the vessel's progress. Further description without the aid of engravings, could not be understood.

The performances of the model are quite surprising. The vessel was made to turn exactly on its center repeatedly, without going ahead, and a slight turn of the adjusting lever would

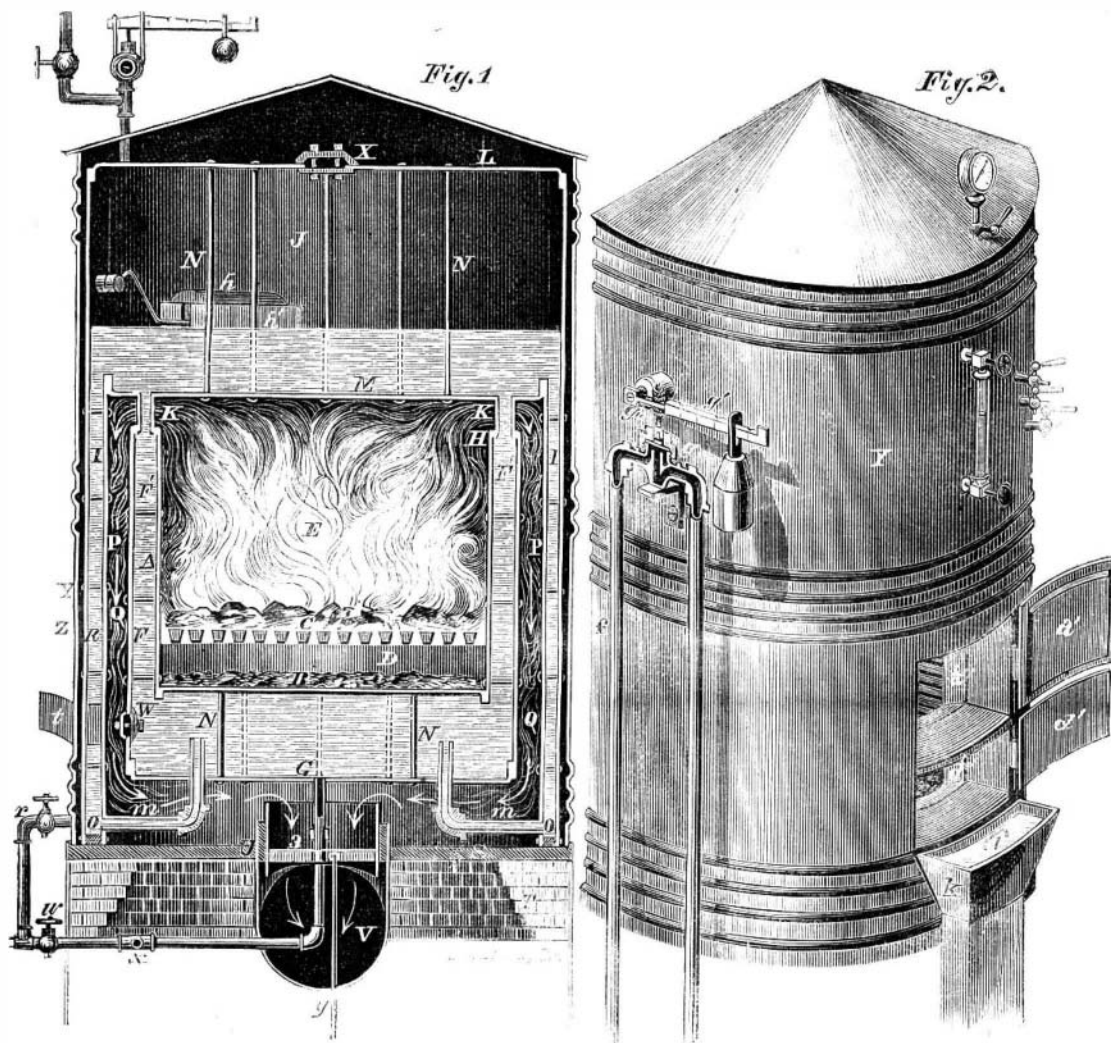
send it either back or forward in a direct line, or in any circle desired, all without reversing the driving machinery and without the aid of a rudder. It is a remarkable contrivance, and is worthy the attention of our mechanics and engineers. It may be seen in operation at the Corn Exchange, Whitehall street, New York city. Foreign patents are now pending through this office. Mr. F. G. Fowler, of Springfield, Ill., is the patentee.

Special correspondence of the Scientific American.

AMERICAN MACHINES AT THE PARIS EXPOSITION.

PARIS, July 2d, 1867.

There are several machines in the American department which are interesting from their ingenuity and efficiency, and accordingly attract considerable attention. First, may be mentioned the Hicks engine, now well known in America, of which several different sizes are exhibited. Our people seem to have a great fondness for endeavoring to produce a steam engine which shall be the most compact, cheap in first cost, and appear, at least, very simple in construction. As evidence of this, witness the host of rotary engines we have brought forward, (and, by the way, as good an example of these as I have ever seen is to be found among our machines in the Exposition,) of which, however, it would hardly be too sweeping an assertion to say, that none are of any value. The reason that so few of such engines have come permanently into use is, that users of power have not been long in discovering that where compactness, or cheapness, or the absence of moving parts from view were obtained by an utter disregard of the amount of steam to be consumed or wasted, and the cost of repairs after wear, the price paid for the former qualities was altogether too dear, and they have concluded that it was more agreeable to see a good-sized coal pile than a mysteriously simple engine. The Hicks engine, however, is a complete exception to these remarks, for though compact, cheap, and invisible as to its moving parts, yet these quali-



C. H. GOULD'S IMPROVED STEAM BOILER.

sufficient for ten horse-power. For further information address C. H. Gould, patentee, 84 West Second street, Cincinnati, Ohio.

LUNKENHEIMER'S TALLOW LUBRICATOR.

The fault with many of the cups intended to hold lubricating material for machinery is that they leak more or less, and that the threads cut on the covers and cups get worn, and after long usage refuse to 'take.' The one shown in the engraving is in this respect entirely different. The cup proper is of the ordinary form and has seated in the center of its bottom a steel spindle, which projects above the top of the rim and engages with a thread cut in the center of the top knob, which is of wood and has a core of brass to which it is secured. The cover is attached to its shank, and turns freely upon it. The edge of the cup's rim has an annular recess filled with Babbitt or other soft metal, and when the cover is screwed down it seats itself air-tight on

