

COMPENSATING STEAM GENERATING APPARATUS.

Mr. John Cowan, in the apparatus illustrated herewith, has devised a certainly novel and ingenious and, according to the practical results which he reports to us, an important method of economizing in the use of steam. It opens the possibility of getting steam for nothing, and even making a small profit—a condition of affairs somewhat difficult to realize. Mr. Cowan's plan is a genuine one, however, and because it is so it is unlikely to carry conviction speedily with it; but as we said before, he has the figures, and, what is better, can point to its successful practice in this country in at least one good instance.

The gist of the system may be explained in few words. In burning limestone in the kiln to make lime, an enormous amount of heat is wasted. Still the amount for which the lime will sell pays a profit despite the waste. Now there is no reason why this lost heat should not be utilized, Mr. Cowan argues, and he further believes that the limestone in burning adds to the heat; whereupon he builds his steam boiler over and about a furnace suitable for the calcining of lime, and makes steam, which costs nothing, with the waste heat which costs nothing.

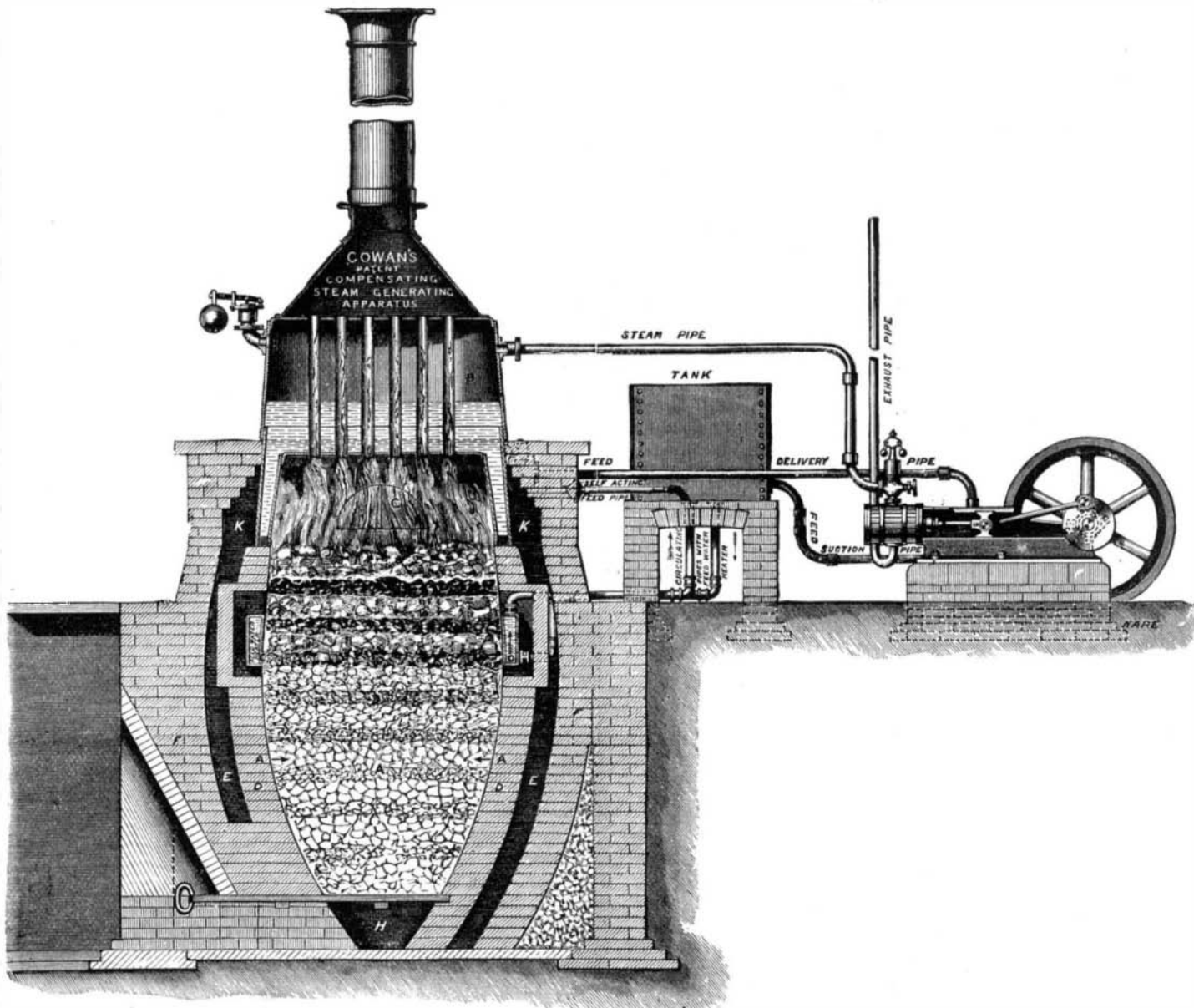
Sometime ago we explained the hot water apparatus which had been constructed on this principle for heating greenhouses and buildings. At the present time the inventor goes a step further, and has contrived an application to steam boilers to supply motors with steam, and thus he proposes a means whereby power can be obtained at practically no cost.

The new apparatus is illustrated in our engraving. A is the furnace, B the boiler, and C a feed water heater. At D is the firebrick lining, and at E and F the air space or sand backing and masonry. H is the drawhole for removing the lime, and K is the flue boiler. The use of the remainder of the apparatus is evident in the engraving. Layers of limestone and coal (anthracite is the best) are placed in the furnace, and the whole fired. The lime remains in lumps, while the coal goes to impalpable ashes and practically disappears. During the night, when fires should be banked (a process of course out of the question while the lime is being burned), the escape of steam is provided for, and an automatic apparatus preserves a constant water level in the boiler. The evaporation is thus kept going on a half rate, or thereabouts, during the night; and in closing the escape valve and opening connection with the engines, work can be begun in a few minutes. The labor required is said to be no greater than in firing with an ordinary boiler, and the furnace or kiln can be made any size. In fact, with the exception of the extra depth and the necessity of an aperture for removing the lime, the furnace is not materially different from that of any steam generator.

The inventor submits testimonials showing that in England a six horse engine was used, for driving a mortar mill and other machinery, at a cost for fuel of only from \$1.25 to \$3.75 per week. He also states that a 15 horse power engine, running under a minimum pressure of 45 lbs., has been operated at an average weekly cost for fuel of \$4.52. It is in heating greenhouses that cases have occurred where the system has yielded a clear profit over all expenses. At the gardens of Stackpole Court, the property of the Earl of Cawdor, in England, the cost of heating the greenhouses was \$487 yearly, with nothing on the credit side but dust and ashes. When the limekiln was used the cost was \$425.16, and as the produce of lime sold for \$477.25, it will be seen that the new apparatus thus cleared its cost and left a balance of over \$50, which, added to the cost under the old system, left a profit of some \$540.

In this country, where limestone and other carbonates of lime are abundant, and can almost always be obtained for the mere cost of quarrying and hauling; and where anthracite coal abounds, it is believed that the process can be car-

ried on even more economically than is indicated by the foregoing figures. In addition to its application to steam boilers and to greenhouse heating, the invention has likewise been adapted for gas manufacture, and is said to be very successfully employed for this purpose. In fine, the uses to which the apparatus may be put embody all those where economy of working is the great desideratum, such as for pumping, driving stone-crushing machinery, mortar mills, etc., and for contractors' use, in the construction of railways, docks, and other works where large quantities of lime are required for building tunnels, bridges, retaining walls, etc.; also for draining mines and quarries, irrigation and sewage



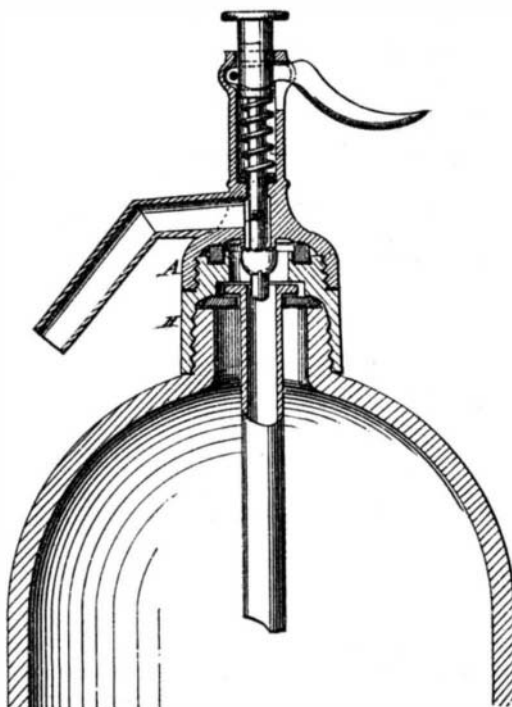
COWAN'S COMPENSATING STEAM-GENERATING APPARATUS.

works, for use in chemical works and breweries, and where evaporation is carried out on a large scale.

Mr. Cowan, the inventor, is now in this country, and may be addressed at the Astor House, New York city. He is desirous of disposing of all his American patents relating to the device. Through the kindness of Matthew Baird, Esq., of Derby Road, Philadelphia, Pa., an apparatus of this kind can be seen in successful use.

IMPROVED SIPHON HEAD FOR BOTTLES, ETC.

Mr. Joseph W. Stillwell, of Peekskill, N. Y., has paten-



ted, through the Scientific American Patent Agency, September 26, 1876, an improved siphon head for mineral water bottles, etc., illustrated herewith, the object of which is to enable the valve of the head to be removed and repacked or

repaired without disturbing the connection between said head and the bottle.

The novel feature is an extension collar, H, upon which is formed a screw thread to screw upon the neck of the bottle, and another a screw thread to screw into the inner surface of the base, A, of the head. Upon the collar, H, is formed a groove to receive a packing ring, which is pressed against a shoulder of the base, A, to prevent any leakage. Around the opening through the collar is formed a recess to receive the upper end of the glass pipe, and a shoulder to receive the packing that prevents leakage through the joint between the collar and bottle. With this construction the head can be unscrewed from the collar, H, and detached, and the valve repacked or repaired without disturbing the connection between the collar, H, and the bottle, and without disturbing the position of the glass pipe.

The Carpet-Eating Bug.

For some time past the housekeepers in Schenectady and in Utica, N. Y., have suffered from the ravages of a peculiar bug, which, though wholly unlike the carpet moth, is nevertheless fully as persistent a destroyer of carpets. It infests the edges where the fabric is nailed to the floor, and eats large holes. Occasionally entering a crevice between the floor planks, it follows the crack, eating as it goes, cutting the carpet as cleanly as if shears had been used to divide it. The depredations of the insect have lately increased, and the pest seems to be spreading to cities adjacent to those above mentioned.

In appearance the insect is ovate, about $\frac{1}{8}$ inch in length, and is thickly clothed with numerous short bristles like hairs, terminating in a bunch forming a tail. It is exceedingly active in its movements. Professor Lintner, of Schenectady, who recently examined the bug, pronounced it the larval stage of a beetle, and in all probability a member of the very destructive family of *dermestidae*, and belonging to the genus *anthrenus*. Quite lately he succeeded in obtaining the first example of a perfect insect, a very minute beetle, approximately $\frac{1}{10}$ inch in length, but beautifully marked in red, white, and brown. This was submitted to Dr. Leconte, of Philadelphia, and that distinguished authority confirmed Professor Lintner, and determined the bug to be the *anthrenus scrophulariae*, a very common destructive insect in Europe, but never hitherto detected in the United States. It is allied to the *a. varius* or museum pest, which destroys stuffed animals and similar objects in museums. No preventive measures against the insect have yet been found.

The Centennial Main Building To Remain.

The Fairmount Park Commission has yielded to the popular demand, and the Main Exhibition Building is to remain, to be used as a grand bazaar and industrial fair: with the proviso, however, that the structure is to be removed after two years' notice shall have been given. The charge for admission is restricted to 25 cents for five days of the week, and 10 cents on Saturday; and when the income it yields is sufficient to pay expenses and interest on the investment, the admission fee is to be still further reduced, so that the public may enjoy the exhibition at the lowest possible charge for entrance.

The British Government has recently presented Philadelphia with the handsome buildings now occupied by the British Commission. What with the Main Building, Memorial Hall, Horticultural Hall, and probably Machinery Hall, together with the British edifices, the statues, etc., it appears that a considerable portion of the Centennial structures will be left, affording all the facilities for a very large permanent display.

The Exposition will close on November 10; but visitors will continue to be admitted as usual after that date, in order to provide necessary funds to defray expenses of police maintenance, etc.