

IMPROVEMENT IN GAS PUMPS.

The apparatus here illustrated is designed to facilitate the compressing of illuminating gas in vessels, so that it may be transported from the gas-works to illuminate small villages or private houses in the country, or upon steamboats, railroad cars, &c.

A pump, B (Figs. 1 and 2), having the piston, B', is filled with water, and the two pipes, a and a', lead from the ends of the pump into two strong iron cylinders, A and A', which are half-filled with water. As the piston is pushed back and forth, the water is forced alternately into each cylinder, compressing the gas in its upper end and driving the gas through the pipe, D, into the vessel in which it is to be transported. A pipe from the reservoir or gasometer connects with the middle of the pipe, C, which branches into both cylinders, each branch having a check valve, c and c', to prevent the return of the gas as the water rises in the cylinder. As the piston is forced inward, forcing the water into cylinder, A', the water in cylinder, A, runs down into the pump, drawing the gas into the upper part of cylinder, A, which is in its turn compressed and driven into the receiving vessel on the return stroke of the piston.

The piston, when worked by hand, is driven back and forth by means of a screw, F, working through a fixed standard, H, and connected with the end of the piston rod, E, in the manner shown in the cut, so that the screw may turn without turning the piston rod. The pipe, D, has check valves, d d, to prevent the gas reflowing through it into the cylinders. Openings, f f, are made in the upper ends of the cylinders for supplying them with water, and glass tubes, I I, are connected with the cylinders at the sides to indicate the level of the water in the cylinders, in order that the supply may be properly adjusted.

The manifest advantage of this apparatus over the ordinary air-pump consists in sealing the piston and the various connections with water, an advantage that will be readily appreciated by all who have undertaken the difficult task of packing working machinery, air or gas-tight.

The patent for this invention was granted (through the Scientific American Patent Agency) on August 7, 1860; and further information in relation to it may be obtained by addressing the inventor, W. H. Gwynne, at No. 142 Center-street, this city.

AN ATTEMPT TO MAKE IT RAIN.—A letter from Lynchburg, in the *Richmond Dispatch*, says:—"A gentleman who resides near Boydton, Mecklenburg county, Va., has aspired to a new science—that of controlling the clouds in order to cause it to rain at will. With the view of attaining this end he has built a 'rain tower,' which novel structure is said to be thirty feet diameter at the base, which size it retains to the height of forty feet. To this height it contains 4 flues, each 7 feet in diameter. The number of flues is then reduced to two, which run up twenty feet higher, the top of the structure reaching an altitude of sixty feet. The whole concern was erected at a cost of about \$1,000. The *modus operandi* of causing rain to fall is as follows:—The flues are filled with dry pine wood, which is set on fire, and which is kept up until the desired effect is produced on the elements. His theory is that the great heat produced in the air above the 'tower' will cause the clouds to concentrate over it, when plenty of rain will fall in that vicinity. The originator of this novel idea is said to be a firm believer in the practicability and

utility of his invention, notwithstanding the fact that, after repeated trials, during which he consumed hundreds of cords of wood, his tower failed to produce the desired effect on the unpropitious heavens, he having been a great sufferer from drought during the entire Spring and summer." This is the famous plan proposed by Espy, several years ago, except that it is on a much smaller scale. Espy proposed to build a large

whole length of the cylinder, A, being closed at one end by the head, d, of the cylinder, and open at the other end, the head, e, being perforated for this purpose. Within the space surrounded by the tubes is the conical chamber, F, the larger end of which is closed by the cylinder head, d, while the smaller end passes through the opposite cylinder-head, e. A space is left between the smaller end of the chamber, F, and the axle,

for the introduction of the grain to be dried. Openings are made through the chamber F, near its larger end, and connected by several tubes, c c c, so that as the latter are successively brought to the bottom of cylinder, A, by its revolutions, the grain will fall through the short tubes into the tubes, c c c, through which, from the inclination of the cylinder, it will slowly be shaken, falling out at the end, d. Steam being admitted into the end, f, of the axle, B, passes through the tube, i, and fills the space, G, around the chamber, F, and tubes, c c c, whence it is led by the tube, n, into the opposite end of the axle, and so passes off into the atmosphere. As some portion of this steam would naturally be condensed by the cooling action of the cylinder, provision has to be made for the removal of the water thence resulting. To this end two of the long tubes, k k, are joined throughout their length by the plate, l, this plate being perforated near its end for the tube, j, which leads into the hollow end, h, of the axle. As the cylinder revolves, the water of condensation is raised by the trough formed by the joining of the tubes, k k, and poured through the tube, j, into the axle.

Though the drying of grain is the primary purpose for which this apparatus is designed, it is claimed by the inventor to be the best evaporating apparatus yet invented, for which service it is manifestly well adapted, and is therefore worthy of the attention of the conductors of all arts in which evaporation forms one of the processes. For this purpose, the liquor to be evaporated would take the place of the grain in the apparatus.

The patent for this invention was granted (through the Scientific American Patent Agency) on the 17th of April, 1860; and further information in relation to it may be obtained by addressing the inventor, T. H. McCulloch, at Peoria, Ill.

CHEAP SUBSTITUTE FOR LAMPBLACK, IVORY BLACK, &c.—It is known that the refuse of the cannel coal which is used in the manufacture of kerosene oil is not

a combustible coke like the refuse of common cannel coal, but is a perfectly waste, valueless substance. A writer in *L'Invention*—Mr. Lekieffre, of Namur—says that if this substance is simply pulverized it will answer perfectly for clarifying sugar, for printers' ink, for disinfecting—and, indeed, for all purposes for which bone-black, lampblack, &c., are used. He also says that it is an excellent fertilizer, and completely destroys

all insects. We do not gather from his article, however, that he has learned these facts from actual experiment; and persons trying the substance would be wise to do it on a small scale.

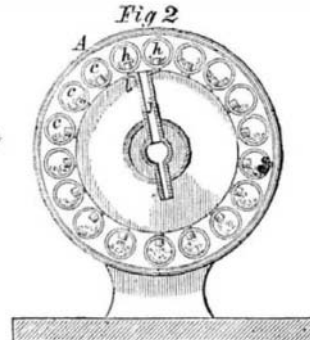
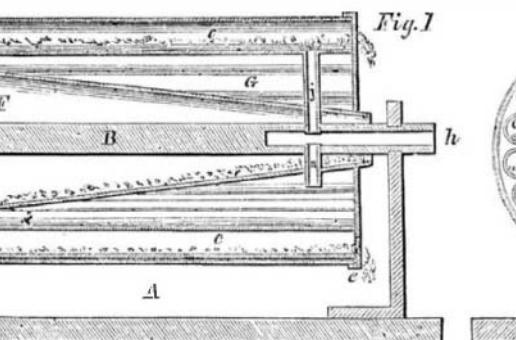
The American Agriculturist is probably the most widely circulated journal, now published, devoted to the interests of agriculture. It has removed to No. 41 Park-row, and has thus become an immediate neighbor of the *SCIENTIFIC AMERICAN*. We extend to it a hearty welcome, and wish it increased prosperity.

GWYNNE'S IMPROVED GAS PUMP.

number of great fires, extending in a long line north and south, when he thought that a rain would occur at the eastward.

MCCULLOCH'S GRAIN-DRYING AND EVAPORATING APPARATUS.

Hundreds of thousands of dollars worth of grain are



M'CCULLOCH'S GRAIN-DRYING AND EVAPORATING APPARATUS.

destroyed every year by moisture, and large quantities have been kiln dried to prevent this evil. In the process of kiln drying, some portion of the grain is almost invariably scorched, and to obviate this, as well as to secure a more rapid and perfect drying of the grain, the compact and convenient apparatus here illustrated has been devised.

A hollow revolving cylinder, A, Figs. 1 and 2, is hung upon a shaft, B, each end of which is hollow, with the middle closed, one of the ends hung a trifle lower than the other. A series of tubes, c c c, extend the