Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOLUME VIII.] NEW-YORK, JANUARY 29, 1853. [NUMBER 20.

THE
Scientific American,
CIRCULATION 17,000.
PUBLISHED WEEKLY
At 128 Fulton street, N. Y., (Sun Buildings),
BY MUNN & COMPANY.

Hotchkiss & Co., Boston.
Dexter & Bro., New York City.
Stokes & Bro., Philadelphia.
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USEFUL RECEIPTS.

To Preserve Beans and Peas.

A new method of keeping the above quite fresh for any length of time, so that they shall lose neither their taste nor original softness, has been lately introduced into notice by A. Albert, of Paris. Take the beans when not much bigger than large peas, and pursue the following directions for both vegetables: Plunge them for a minute in boiling and afterwards in cold water, and after having washed off the water, spread them out for several hours on canvas frames. Then place them in an oven slightly heated on frames covered with paper, leave them long enough to be of the same warmth as the oven, and then expose the frames to a current of air until the articles are cold. The frames are then to be replaced in the oven and again exposed to the air, these operations being repeated until the beans or peas are perfectly dry, not so as to break, but almost like beans dried naturally. The articles should be gathered and dried on the same day, if not, they should be left during the night in the oven; they should be kept in dry and clean bottles, and to each bottle of beans there should be added a bunch of dry savory. Before using the vegetables they should be steeped for some hours in tepid, or over night in cold water; if they are beans the water is thrown away and they are cooked in the usual manner, but if peas, they are only just covered with the water, which will be entirely absorbed, and they are cooked like green peas. Vegetables prepared in this manner are quite as good as if they had been just gathered.—[Genie Industriel.

Coloring Black.---Scruples about becoming a Subscriber.

I called on an individual, in this place, and advised him to subscribe for the Scientific American, but he had doubts about becoming a subscriber. He said, however, if you could tell him how to color a black on cotton and wool, that is, a cotton white weft, and a woolen white warp, without injuring the cloth, he would then believe you understood your business, and would take your paper. I want to be clearly understood: the cloth is white composed of wool and cotton. The person I speak of is a cloth manufacturer. J. T.

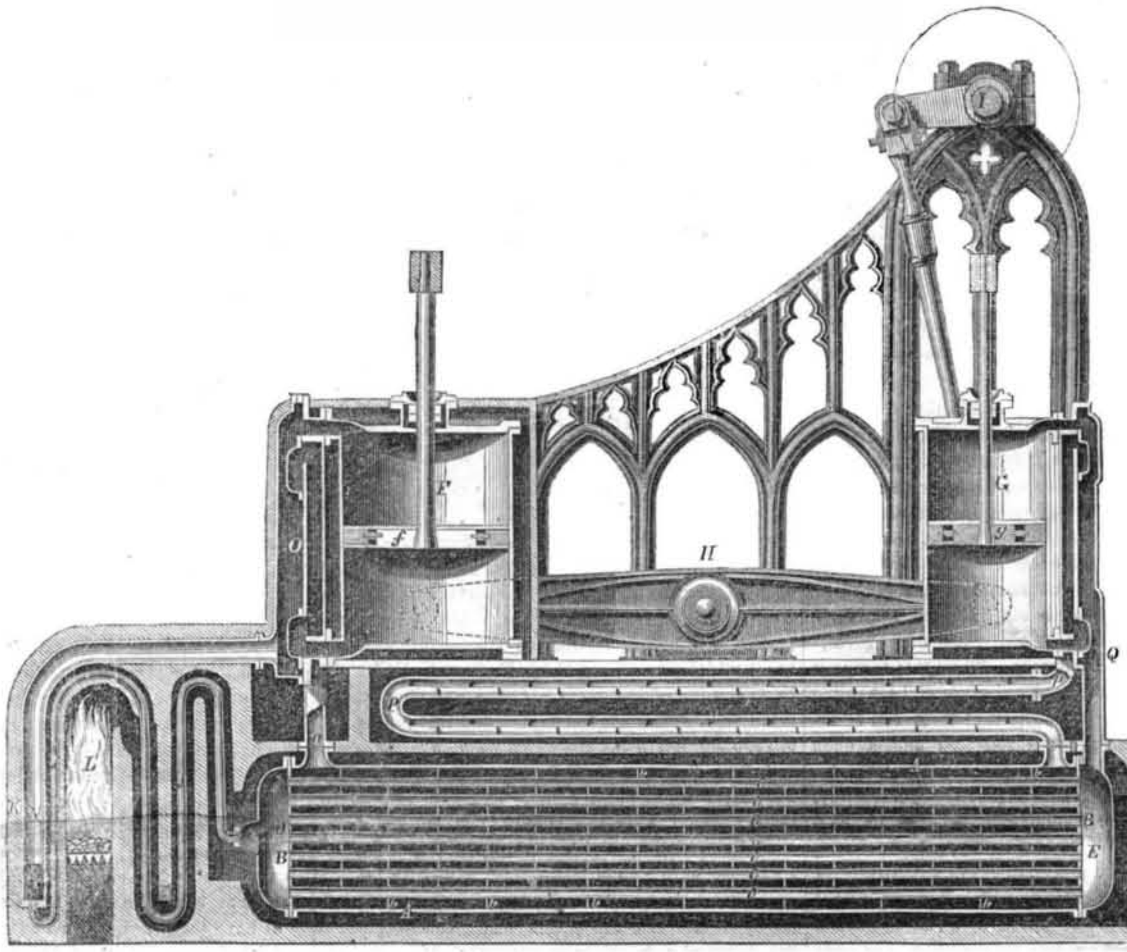
Alva, Canada West, Jan. 12th, 1853.

[We are not solicitous about the scrupulous gentleman's patronage, but we can do the very thing he wants. We know how to color a piece of white goods, half cotton and half wool, a good black, and not injure the qualit of the goods as much as if it were composed of cotton and wool dyed separately. We can furnish practical receipts for doing this or any other color whatever.

A Golden Fashion.

The latest Paris fashion is powdering the hair with gold dust and filings of silver. This fashion will suit California and Australia; but the expensiveness of the powder is likely to speedily explode the fashion.

ERICSSON'S CALORIC ENGINE.---Figure 1.



We will now present a "History of the Caloric Engine," accompanied with such remarks as our readers expect us to make.

Figure 1 is a longitudinal vertical section of Capt. Ericsson's first Caloric Engine, patented in England in 1833, and described in Sir Richard Phillips' "Arts of Life," published the same year.

"A is the regenerator, consisting of a cylindrical vessel, closed at the ends by the plates, B B; through these plates a number of small tubes, C, pass from end to end, terminating in the caps, D and E, thus forming a free communication between them, but not communicating with the body of the regenerator. A number of division plates, *b*, divide the regenerator into as many chambers, and these are made to communicate with each other, by segments being cut out alternately from the tops and bottoms of the division plates. The tubes, C, are also provided with division plates, or small metallic discs, placed in opposite directions to each other. F is the working cylinder of the engine, called the hot cylinder. G is a smaller cylinder, called the cold cylinder, which receives the air that escapes from the former, and then forces it back again, for every stroke of the piston, thereby keeping up a constant circulation of the impelling medium and promoting a constant transfer of heat. The pistons of the two cylinders are connected by a beam, H, side-rods, and cross-heads, similar to a common marine-engine, and the cylinders are provided with slide-valves, nearly of the common construction, moved by suitable gear from eccentrics fixed on the crank shaft, I.

J is one of a series of pipes inclosed in a stove, K, acted upon by a fire, L, the combustion being supported by ordinary draught, caused to circulate round the regenerator, and passing off from M, into a chimney. The pipe, J, in the stove, all terminate at one end, in the cap, D, and at the other end in the pipe, N, which communicates with the slide-box, O, of the hot cylinder. P represents a cooler, and consi ts of one or more pipes, exposed to some cooling medium, these being, like the longitudinal pipes in the regenerator, provided with a number of metallic discs.

Previous to describing the action of the engine, let us suppose that the stove with its pipes and the working cylinder, have been brought to some considerable temperature, and likewise the regenerator with its tubes brought to the same temperature nearest to the stove, gradually lessening so as to be, at the opposite end, equal in temperature with the surrounding atmosphere. By examining the positions of the slide-valves, as represented in figure 1, it becomes evident that if air be, by some means, forced or pumped into the caps of the regenerator, such air will on the one hand, find its way through the stove-pipes, &c., into the top-part of the hot cylinder, and on the other hand, through the connecting-pipe, Q, into the top-part of the cold cylinder. Now, since the hot cylinder is larger, say double the size of the cold cylinder, it follows that the power of the piston, *f*, will vanquish the power of the piston, *g*, and make it ascend, at the same time itself descending: thus motion will be produced, and the crank-shaft begin to revolve, and, by reversing the position of the slide-valves, when the pistons have performed their full strokes, that motion will be continued.

By further examining figure 1, it will be seen that the cold cylinder receives its supply of air from the *body* of the regenerator through the cooler, P, and the pipe, *p*, entering under the slide valves, it will also be seen that the hot-air from the hot cylinder escapes under the slide-valves, through the pipe, *n*, into the body of the regenerator,—hence the same air that escapes from the hot cylinder supplies the cold one. In like manner it will be found, by referring to fig. 1, that the air forced from the cold-cylinder into the cap, E, must pass through the pipes of the regenerator, stove-pipes, &c., to supply the hot cylinder.

From what has been already said, the action of the engine, and the transfer of the heat become almost self-evident; it need, therefore only be briefly stated, that the hot-air, in escaping from the hot-cylinder, will, during its passage through the body of the regenerator, give out its heat to the tubes, C, being, by the peculiar arrangement of the division plates, *b*, compelled to ply round those tubes. And the cold air, coming from the cold cylinder, will, in its passage through the tubes, C, naturally take up the heat imparted to them, its particles being kept in a constant state of change by the small metallic discs. A transfer of heat being thus effected, it becomes evident that the office of the cooler will be that of carrying away any heat from the air which has not been taken up in the regenerator, and that the office of the stove will be to give an additional quantity of heat to the circulating air, previous to its entering the hot cylinder, in order to make up for a small deficiency which will always be unavoidable in the transferring process, besides the losses caused by radiation.

The power of the engine will mainly depend on the density of the circulating medium, —accordingly, by having a small pump attached to the engine, the power and pressure may be varied at pleasure. High pressure will, of course, produce the greatest proportionate effect; since the losses, by radiation, will remain the same under whatever pressure.

The trial engine, which has been erected by the inventor, and the action of which has been found in every respect satisfactory, may be fairly estimated at five horse-power; it makes fifty-six revolutions per minute, having a break wheel fixed on the fly-wheel shaft, loaded with upwards of five thousand pounds weight. The working cylinder is fourteen inches in diameter, and the cold cylinder ten and a quarter inches in diameter, both making eighteen inches stroke, working under a pressure of thirty-five pounds to the square inch. The regenerator, in this trial engine, is eight inches and a half in diameter, and seven feet six inches long, containing seven tubes, of two inches diameter each; and its operation is so