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Benefit of Steam Jackets.

The steam which enters the cylinder of an engine radiates considerable heat, and a portion of it is thus condensed into water. All this is dead loss, and to avoid it, James Watt first applied what is called a *steam jacket.* This consists in casting the cylinder of an engine with an outer casing, and leaving a space between, for the admission of steam from the boiler, so as to keep the steam in the cylinder at the same temperature throughout the whole length of the stroke of the piston. The outside case or jacket is also enclosed with staves of wood and several layers ef felt. Very few American engines have steam jackets, but all Cornish engines have them, and their economy in doing duty with a certain amount of fuel is well known. Many engineers of high reputation have argued against the use of the steam jacket; they have said that "the steam jacket itself is subject to radiation as well as the cylinder, and as it has a far more extended surface, more steam must be condensed in it than in the cylinder alone; therefore its use is a disadvantage, not a benefit." This is plausible reasoning, and the only arguments which can be presented against it are plain facts, which are "sturdy things that cannot be refuted." If it can be established that steam jackets are economical, every steam-engine should have one, or an equally efficient substitute.

Bourne, in his elementary treatise on the steam-engine, says:—"In Cornwall, where great attention is paid to the economy of fuel, all the engines are made with steam jackets, and in some cases a flue winds spirally round the cylinder for keeping the steam hot. Mr. Watt, in his early practice discarded the steam jacket for a time, but resumed it again, as he found its discontinuance occasioned a perceptible waste of fuel; and in modern engines it has been found that where a steamjacket is used, less coal is consumed than where the use of a jacket is rejected. The cause of this diminished effect is not of very easy perception, for the jacket exposes a larger radiatory surface than the cylinder, nevertheless the fact has been established beyond doubt, by repeated trials, that engines provided with jackets are more economical than those without them." This is the testimony of a foreign author on the steam-engine towards establishing the conclusion that steam jackets are economical, and we will now present evidence from an American engineer to the same purpose.

In a communication to the "Journal of the Franklin Institute" for this month, Mr. Gordon Mackay, of Paterson, N. J., details a series of experiments with a small model engine and boiler, the former having a steam jacket which could be placed in communication with, and cut off at pleasure from the boiler. The power of the engine was accurately tested with a dynamometer; the water correctly weighed, and every precaution taken to render the experiments reliable. The first was made with the steam admitted to the jacket of the cylinder; the condensed water being returned from it by a special tube to the boiler. The pressure in the boiler was 115 pounds, the initial pressure in the cylinder 95 pounds, and the final 17 pounds above vacuo. The experiment was continued for eight hours; the number of revolutions was 97,440; the total water evaporated 500.7 pounds, of which 15.7 were condensed in the jacket; the rest passed through the cylinder, and the power of the engine developed was one horse. The second experiment was conducted by shutting off the steam from the jacket; its duration was eight hours also; the pressures of the steam were the same, as were also the revolutions and the amount of power developed. The water evaporated by the boiler, however, to produce the same amount of power in both cases was no less than 630 pounds in the latter—a difference of 129.30 pounds in favor of the steam jacket. To account for this gain, Mr. Mackay believes that the *sensible* heat of the steam is taken up in the cylinder to maintain its working temperature, while in the jacket it is the *latent* heat which performs the office. This appears to be a good theory; but whether true or not, the experiments themselves are valuable and afford proof that a saving of more than 20 per cent can be effected by the use of steam jackets on the cylinders of non-condensing as well as condensing steam engines.

Honors to Josiah Wedgewood.

From a late number of the *Art Journal*, of London, we learn that the British people are about to erect some lasting memorial to the memory of this great man, whose name is a household word in every land where crockery is used. But, unfortunately, there are two parties to the scheme—one thinking that an educational institute, with an Art school attached, would be most fitting, and the other holding to the opinion that a statue would be most flattering to his memory. Had there been unanimity in the camp we should have been silent, but as difference of opinion exists, we wish to throw out a suggestion—one that comes to us from an Americau point of view. We are not ashamed to confess that we think Art has a deeper meaning than the portrayal of the beautiful in form and color. To us it meaus the spread of good taste and the appreciation of the true, not among or by the cultivated and rich alone, but among and by the untutored and poor. Feeling this deeply, and earnestly wishing that Art may quit collections and make the humblest dwelling its home, we would ask the gentlemen who feel that it is time to honor the memory of Wedgewood if the following would not be a suitable and world-wide tribute to his manes: Let them offer a high premium for a design combining elegance of form, harmony of color, and grace of outline, which could be made into plates, dishes and saucers, and another that could be formed into pitchers, and a third that would form tea-cups, basins and the like. Let them send a pattern to every pottery in the world, and let it be known as "the memorial ware." The colors must be few, for cheapness is the greatest consideration of all, in order that it might be widely diffused; and this, we think, would be of more real value to the world than any statue or local work, and would be perpetuating, in a higher degree, the work that Wedgewood in his life tried to further. It is really a matter of regret to any one who believes in the elevation of popular taste, to see the miserable abortions, in the way of form, that are sold as crockery, surrounding people from their earliest childhood with bad models from which to form their standard of artistic excellence, when the material in which they are produced is capable of such graceful curves and truthful molding.

It may, to many, seem a small idea to perpetuate and honor a man in a tea or dinner service; but if that set of dishes, plates, jugs and cups has but a tithe of influence for good that the willow pattern of England or the dead-dirty-bluish-white of this country has had for evil upon the taste of mankind, then will it be a true and fitting tribute to a great man's name. Let the Staffordshire people think of this, and, giving up the statue, found an Art school for the express purpose of improving the form, color and cheapness of the commonest crockery. The world wants nothing old, but something distinctive and original, that shall teach the workmau at his meals and preach its humanizing sermons from store windows; that shall call forth a blessing from the weary wayfarer and comfort the discontented soul with its teachings of pure Art. This is not a little work but a great one, aud one in which we hope soon to see our own manufacturers engaged.

Schaefer's Pump.

The pump, one of the most useful of all inventions or discoveries, was known very long ago, it having been invented by Ctesibius, a mathematician of Alexandria, about 120 years before the Christian era, in the reign of Ptolemy, King of Egypt. In the crowd of improvements which daily throng themselves upon the attention of the patient and investigating mind, the name of Ctesibius is forgotten, and it is well, now and then, when introducing a new improvement, to remind the reader of the first discoverer's name.

The improvement which is the invention of L. B. Schaefer, of 213 South Ann street, Baltimore, Md., and which forms the subject of our illustration, is designed to give a greater length of stroke to the piston with the ordinary motion of the hand lever. Fig. 1 shows it applied to a common pump, and

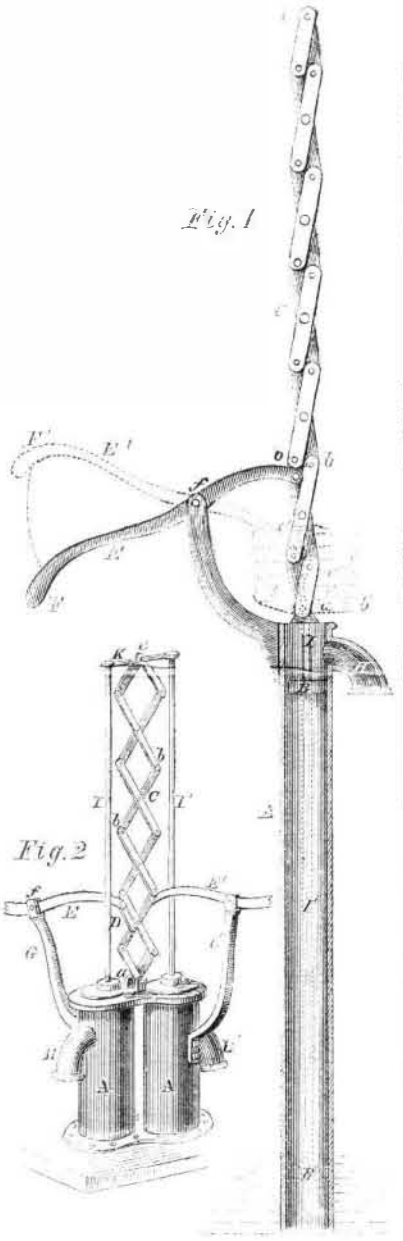

Fig. 2 to ship's pumps. To the upper end of the pump-barrel, A, au arm, G and G′, Fig. 2, is firmly attached, which serve as fulcra for the hand levers, E and E′, and handles, F and F′. Where two pump-barrels are combined (as shown in Fig. 2), the top plate, which covers both barrels, is provided in the center with projection, *a*, to receive the first pair of links of the shear lever, C, but when only one pump-barrel is used, Fig. 1, this projection, *a*, is cast one side of the barrel. The pin which forms the first crossing-point of the shear lever, C, above the projection, *a*, is united with the levers, E and E′, by means of the link, D. This link, D, secures a vertical motion of the pin, and therefore of the shear lever itself, while the levers, E and E′, are turned around their fulcra, *f*. The uppermost end, *e*, of the shear lever, C, is united with the two piston rods, I and I′, by the cross-bar or rod, K, which serves at the same time as a fulcrum for the last two links of the shear lever. In Fig. 1 the lowest position of handle, F, which causes the highest position of the point, *e*, of the shear level, and therefore also of the piston, B, is shown in clear lines, while the highest position of the handle, marked F′, causes the end of the shear lever to move down to *e*, and also the piston, B, to take the position marked B′. This position is drawn in dotted lines. From this it will be seen that while the handle of the lever, E, moves through the distance from F to F′, the piston, B, of the pump is caused to move the distance from B to B, the piston rod, I, being indicated when down its full distance by I′. This distance, B B′, through which the piston moves may be increased or decreased, and depends merely on the number of links which constitute the shear lever. It is evident that the quantity of water discharged by a pump at every stroke of the piston, depends only on the distance traveled by the piston, and also on the diameter of the pump-barrel. The distance traveled by the piston of a pump, constructed in this manner, is at least six times greater than that made by the end point of the lever, E, which is equal to the space traveled by the piston of a common pump, and, therefore, with a pump of this construction, with an equal number of strokes, or in the same time, six times the quantity of water more than by a common pump of the same dimensions will be discharged. The space occupied by these pumps is not more than the ordinary ones, and where, as in a ship, the labor is, in a moment of peril, not of much consequence, they will prove very valuable, and no doubt aid greatly in the saving of human life.

This ingenious and practical invention was patented March 22, 1859. An operating model may be seen at Simon's Hotel, Baltimore, and the inventor will be happy to furnish any further information upon being addressed as above.

Death of Professor Olmsted.

Denison Olmsted, LL.D., Professor of Astronomy in Yale College, died at his residence in New Haven on the 13th inst., in the 68th year of his age.

The *Evening Post*, in speaking of the sad event, truly says:—"His surviving college mates, and forty classes of his pupils, with the unnumbered teachers and readers of his scientific works, will peruse this notice with the profoundest sorrow, and sympathize with his bereaved family. Professor Olmsted was graduated at Yale College in the last class taught by President Dwight; and from that time to the close of his life (with the exception of a few years passed at the University of North Carolina,) he has been an active, able and successful teacher of science in the same institution. His last winter's course of lectures is spoken of at New Haven as the most full and brilliant of any delivered in the course of his long and useful life. The exhaustion which followed these labors aggravated the habitual infirmity of his constitution, and brought on the acute neuralgia under which he sunk. The scientific labors and writings of the professor have been prominently before the public during the period of nearly 40 years, since he undertook the geological survey of North Carolina; and his books have been the source of a large income, which enabled him to make his beautiful home at York Square the seat of hospitality to the vast circle of literary and scientific men which is habitually found at New Haven. His garden and grounds, we learn from a friend, were blooming in their richest luxuriance the morning of his death, unconscious that the hand which had long tended them was finally withdrawn, and that the eye which had so lovingly watched them was closed forever. His family cannot yet realize the desolation which must follow his removal from a home lately so full of light, and joy, and happiness. But they have the rich and enduring solace of his life-long care and counsel, his well-earned reputation, and his last words, 'all is peace within.' Professor Olmsted was one of the most accomplished and best known of our men of science. He was a member of many of the scientific institutions of this country as well as of Europe, a large contributor to the various scientific periodicals, a voluminous author, and both as a teacher and a man universally beloved."