

been thrown aside from this cause, and both the principle of expansion and the patentee alike injured. And, as regards the radiation of heat, the other matter alluded to, and which has a most important bearing on the subject of expansion, there seems to be but little attention paid to it, if in fact there is any at all—that is, in most cases, cylinders lie naked and exposed in cold rooms, and steam pipes, unclothed, run along floors and by stone walls, without any protection whatever, and then it seems a matter of surprise to the various parties concerned that with an apparent pressure of 75 or 80 lbs. per square inch, they do not get the work demanded. It would be found, on thorough and careful management, every way better and more satisfactory to increase the cylinders and apply expansion gear, than to go on, day after day, in the old way—forcing the boiler and engine to the ultimate destruction of both, years before they should have given out.

William Fairbairn (than whom no more practical nor able engineer exists in England) says of forcing engines and boilers, and working non-expansively that it is "the great evil which causes all the trouble, and the gangrene which corrupts the whole mechanical system," and recent disasters and explosions tend to confirm the opinion.

It is impossible to conceive of a more economical, safe, and in every way efficient system of steam power, than the principle of working expansively; the steam escaping in tiny jets at the exhaust, rather than with a rush and roar which makes everything tremble; the fuel burns quietly away and roasts itself into ashes, instead of melting into a mass of clinker and burning out the grate bars; and the whole system moves on as harmoniously as one can conceive of. A little practical looking after the every-day, common-sense matters of the use of steam power, rather than dabbling in abstruse philosophical theories, which are of no earthly use to the manufacturer or to the mechanic until they become absolute scientific facts, would result in a more complete system than this country has ever yet enjoyed; and manufacturers would have no more cause to complain of the expense attending the use of it. And it is plain that in order to effect this much-desired end there must be some vital regeneration of the forces antagonistic to such reform. These lie not in legislation, nor yet bitter invective and much exclamation, which the daily press employs on the occasion of each disaster; the rather must we look to increased vigilance on the part of employers as a matter of absolute protection to their lives and property, and to engineers for increasing and never-tiring vigilance on their part. If, as we read, "eternal vigilance is the price of liberty," it is much more the price of safety about steam.

PERORATION ON A WAGON BRAKE.

A case was recently argued before Judge Dunlop at Washington, on appeal from the decision of the Commissioner of Patents, involving the novelty of a wagon brake, and upon which the aspiring attorney "spread himself out" in the following eloquent style. The remarks we find reported for the venerable *Intelligencer*:

"Now (said he) far be it from me to reflect on the action of the honorable Commissioner, for I can readily perceive the force of the reasons which he gave for declining to interfere in the matter. Nor do I wonder that those to whom he intrusts the duty of making the original and final examinations makes mistakes, but I do wonder that they make so few, knowing as I do, by practical experience, the numberless official cares and trials unseen by stranger eyes, which continually harass, annoy, and weigh down their spirits during all the hours of the day, and which often reach and burden the mind with their leaden weight and influence even during the still and silent hours of the night. I have done; but I feel and know that into the hands of an impartial judge the interests and rights of my client are now committed, for a decision which is destined to surround the home of a meritorious inventor with all the comforts and joys which an earthly competence can afford, or to crush forever the bright anticipations which have long, and are even now, alternating between hope and fear."

No one being dead we may be permitted to add, by way of completing the picture, that, when the aurora of the morn's bright future shall dawn upon this occidental hemisphere, may it shed its refulgent beams upon a proud and happy people, whose highest anticipations of earthly bliss have been realized over all that vast expanse of territory from the rock-bound coast of Maine to the tranquil shores of the Pacific!

"The star-spangled banner, O long may it wave!"

TESTIMONIAL LETTERS.

The accompanying letters (selected from a large number received within a few days) indicate the universal sentiment of inventors who have their business conducted through the agency connected with this publication. We might fill columns every week with such testimonials; but the few we select are sufficient to show the character of such as we omit:—

MESSRS. MUNN & Co.—I received your note in due time, stating that my Letters Patent were ordered to issue. I assure you it was gratifying intelligence to me; and you will please accept my sincere thanks for your services in prosecuting my case before the Patent Office. I shall take great pleasure in recommending you as prompt and skillful patent agents to my friends. I have conversed with manufacturers and patentees who have done business with you, and all unite in giving you the highest praise. Respectfully yours,

B. E. ORTON.

LYNDON, Ill., March 12, 1860.

MESSRS. MUNN & Co.—Dear Sirs:—We received your letter of the 28th ult. in due time, bringing to us the gratifying intelligence that you had been successful in conducting our patent case. We received our Letters Patent on the 9th inst. We feel under obligations to you for the manner in which you have executed our drawings, and for the promptness with which you have prosecuted our case through the Patent Office; and we assure you that if we should ever make application for another patent, it shall be through the medium of your agency, and shall commend you to our friends or any who we may find desirous of procuring patents. We will also do all we can to extend the circulation of your valuable paper. We remain your obedient servants,

H. GARTNER,
J. McCANN.

NASHPORT, Ohio, March 12, 1860.

MESSRS. MUNN & Co.—Verily, you are not mere agents, but true and sincere friends to patentees and inventors. You have got granted to me more than I ever expected, or even dared to ask for. I deeply appreciate your kindness, and shall not fail to reward you handsomely in case I should make anything by my invention. Meanwhile, accept my heartfelt thanks for your generosity. I am, with sincere respect, your obedient servant,

C. PRETSCH.

TRENTON, N. J., March 15, 1860.

MESSRS. MUNN & Co.—Gentlemen:—The patent for my improved steam boiler came to hand a few days ago. I am much pleased with your promptness and success in obtaining me my Letters Patent, and shall take great pleasure in recommending you to my friends. Respectfully, your obedient servant,

JOHN ARMSTRONG.
NEW ORLEANS, La., March 13, 1860.

The annexed extract is made from another letter written on other business:—"The writer of this takes this opportunity of returning his sincere thanks for the very able, prompt and efficient manner in which you have conducted his case. On the 6th inst. the patent was issued; by the end of this week our factory for manufacturing the article will be in full operation, and we have already orders on hand sufficient to keep us busy for some weeks."

SELF-ACTING SHIPS' PUMP.

There is a great power in the waves of the sea, and several attempts have been made to apply it to work bilge pumps, but without success until now. The apparatus of J. W. Mackenzie, 65 Butler-street, Brooklyn, recently noticed in our columns as having been secured by patent, and which we have examined, appears to have peculiar merits in making a leaky ship, for example, free itself from water by its own motion. The patent covers the arrangement of chambers and valves in such relation to and in communication with a ship's hold and discharge-pipe or passages; that as the ship pitches or rolls heavily, any water which flows into her hold by reason of being sprung, shall be automatically raised therefrom and discharged into the sea. The apparatus is so arranged that it displaces no cargo. It is a fresh water tank, taking the place of a tank carrying 8,000 or 10,000 gallons of water; besides it forms a bulkhead dividing the hold into two separate compartments, on the same principle that is now coming into general use. The lower chamber of the apparatus is a well room for the ordinary pumps after it has been emptied of fresh water. It is also a ventilator, carrying off foul air from the bilges. The inventor is a practical seaman, having been for several years an officer on board of steamships, for which branch of marine he considers the invention indispensable. Many of our steamers that have gone down might have been saved or kept afloat long enough to be run ashore, brought to anchor, or until a friendly sail hove in sight to rescue the living freight.

INDUSTRY—MANUFACTURES—COMMERCE.

Basket Willows.—George Rhey, in the *Gardener's Monthly*, says:—"The *Salix Russelliana* is the kind of willow generally grown around Philadelphia for osier work, and is the same as usually employed by nurserymen for tying. They are mostly grown on swampy ground, in rows 8 feet by 2. A crop (sometimes two) of hay is also cut off per annum, and enters into the calculation of profit from the plantation. The crop is not worth much till the third year, when it will produce about \$15 per acre. About five or six years after planting they are in their prime, and will afford from 15 to 20 pounds from each stack, and bring prices ranging from four to five cents per pound when cleaned. The willows are cut just before the buds burst in Spring, and must be kept moist till cleaned." As several persons have made inquiries of us in regard to the peeling of willows, we answer all by saying that, by boiling them for a few minutes in a large iron boiler with water, the skin peels off easily from end to end, leaving a beautiful, smooth surface. This is the method pursued in all factories where dry willows are made into baskets. The boiling has also the effect of rendering the willows much tougher than when in the green state.

Cotton.—The year's crop of cotton is 4,500,000 bales, which is 671,000 more than that of last year. The prices of cotton are rather low, while those of manufactured goods are very fair; therefore, manufacturers are making large profits.

American Copper.—During the past year, 696 tons of copper were shipped from the various mining districts of Lake Superior. This was an increase of 149 tons over the product of the previous year.

Eastern Shipbuilding.—Increased activity is now manifested among the New England shipbuilders; and yet there never was more difficulty in obtaining paying cargoes for those vessels that are now in our ports. The keels of two new ships, of 1,000 tons each, have lately been laid at Newburyport, Mass., and a number of small coasting vessels are on the stocks. The Maine shipyards are becoming more busy than they have been for two years past.

Strikes of Trades.—Quite a number of strikes have taken place recently. In addition to the great strike of the shoemakers in Massachusetts, the mechanics of Baldwin's works, in Philadelphia, have struck for 50 per cent over days' wages when they are working over-time.

Oregon Gold.—Further accounts from California have been received, the great feature of which are the reports from Oregon concerning the discovery of new gold mines, of vast richness, in the vicinity of Jacksonville. Marvelous stories are told of the success of some of the miners.

Exports of Cotton Goods.—The value of American manufactured goods exported last year, amounted to \$8,316,222; in 1858, it was \$5,651,504; being an increase of \$2,665,718.

Imports.—There has been a very great increase of foreign imported goods, and many sensible merchants express fears regarding our ability to pay for them. Since the 1st of January, goods to the value of no less than \$53,486,822 have arrived; which is an increase of \$5,000,000 over the same period of time in 1859. Our total exports of goods in this period has only amounted to \$17,098,000.

Metal Market.—The metal market is not very lively. The price of foreign pig iron has advanced from \$24 to \$25.50 and \$27. This is owing to the strike among the Scotch iron-makers.

Breadstuffs.—The best qualities of flour are in very good demand, and range from \$7.50 to \$8. The poorer grades are very dull of sale.

THE PROFITS OF TANNING.

The leather-dealers of this city, in their recent circular on the depressed condition of the trade and manufacture, give the following estimate of the profits of tanning. It would not seem to be a very disastrous business. They take 10,000 hides as a basis; a greater or less quantity will give the same result:—

10,000 hides, average say 22 lbs., 220,000 lbs., say cost 22c.	\$48,400 00
Add 5 per commission for buying.	2,420 00
Loss of interest on value of hides, say 7 per cent.	3,388 00
Cost of hides, commission and interest.	\$54,208 00
220,000 lbs. hides, with gain 60 per cent—\$52,000 lbs., at 21 cents.	78,920 00
Deduct 6 percent for selling leather.	4,435 20
Net proceeds.	\$69,484 80
Deduct for hides, commission and interest.	64,208 00
Leaves tanner for tanning.	\$15,276 80