Correspondence

The Way to Bleach Sponges.

MESSRS. EDITORS:—I have noticed lately in your paper articles respecting the bleaching of sponges but the method described does not agree with my experience. In one of them chlorine is used; but this substance will bleach animal matter yellow—never white, and in a free gaseous state is very apt to destroy the animal fiber. Sulphurous acid will bleach animal matters white without injuring them, but it takes a long time to bleach sponges with this gas. As I have had opportunity enough to bleach sponges, I will communicate my process to you, by which any one may do the thing correctly.

I combine the two agents—chlorine in the form of chloride of lime, and sulphurous acid in the form of sulphide of soda. Messrs. Tennant, Glasgow, Scotland, import the best chloride of lime. Sulphite of soda is easily prepared in the following manner:—Take 42 ounces of crystallized carbonate of soda, spread it on some paper in a moderately warm and dry place, where it will soon be converted into a fine white powder by losing its water of crystallization, and will then weigh only one pound. Mix it well with 10 ounces of flour of sulphur, and put this powder in a flat cast-iron vessel with a rounded bottom; put the vessel on a slow fire and stir with an iron stick; by and by the powder will commence to bake into lumps and a light blue flame will spread through the whole mass; remove from the fire and continue to stir for two or three minutes, then cover with an iron lid; after five minutes remove the cover and stir again for some time; repeat this as often as a flame again appears, and then let it cool. Dissolve the mass in two gallons of warm water and filter through paper. This solution is pure enough for bleaching.

Before bleaching the sponges must be cleaned, as they often contain a good deal of sand and always more or less small sea shells. The sand is best removed by beating the sponges with a light stick and by shaking them. The shells are dissolved in water containing the twentieth part of muriatic acid, in which the sponges are immersed for two or three hours and then washed in clean water.

Now the solution of chloride of lime has to be made. Dissolve one pound of chloride of lime in two gallons of cold water, triturating the lumps well with a wooden stick—no iron must come in contact with this solution—stir thoroughly for ten minutes, and then let the solution stand till it is clear. Decant from the sediment and pour another gallon on the same; stir and let it settle again, then add the decanted fluid to the first. The dissolving is best done in a stone vessel, and the same are best for bleaching. Besides the two vessels containing the bleaching liquids, another one of about the same capacity—say two gallons—is wanted for diluted sulphuric acid; fill this about three-fourths full of water and pour in, under constant stirring, six ounces of sulphuric acid.

To bleach the sponges, immerse them first in the acid water; squeeze them with a pair of broad wooden tongs, as the different solutions affect the skin very much, and immerse them in the solution of chloride of zinc for two minutes. Squeeze the liquid in the same vessel and put the sponges back in the sour water, squeeze out again and immerse in the solution of sulphite of soda for a short time; squeeze again, and put it in the sour water. Repeat the same operation two or three times till the color is gone and then wash well in clean water, and dry in the open air. On the place where the sponges were fastened is oftentimes a dark brown spot; it is best to cut this out, it will not bleach. GUSTAVUS A. SCHMIDT.

Swatara, Pa., June 30, 1865.

Manufacture of Mainsprings in Watches—A New Idea.

MESSRS. EDITORS:—There is no practical watchmaker who is not familiar with the difficulty of procuring a good mainspring—one that is sufficiently strong, permanently elastic and not liable to break. I wish to make a suggestion through the medium of your paper, which, by meeting the eye of some thinking spring maker, may lead, in some measure, to the correction of this difficulty. All springs, now in use, are made flat, like a narrow strip cut from the edge of a thin sheet of metal; and I am convinced, from careful investigation, that in more than nine cases out of ten, when a spring breaks, the fracture begins at one edge. Now it occurs to me that if the spring was made slightly convex on the outer and concave on the inner side, so that when it is coiled in the drum the convexity of one coil might fit into the concavity of the next, the object would be accomplished. This would give the spring much additional strength, so it might be made thinner, and consequently longer—all being desirable qualities. But the principal advantage which such a spring would possess over the common flat spring, would perhaps exist in its less liability to break. For the greatest tension of its metal would be at the center of the convex surface where a flaw would be less likely to occur, and a rupture more difficult to start than at the edge.

If some spring manufacturer will prove the plan successful, he will save the people from an immense tax for new springs. J. W. H.

Paoli, Ind., June 12, 1865.

Jacketing Steam Cylinders.

MESSRS. EDITORS:—If the advantages of jacketing the cylinder are as great as generally believed, may, we not reasonably expect increased economy would result from protecting all the steam passages of an engine. Many engines, as now built, with exposed steam chests and cylinder heads thickly covered with bolt heads and nuts, look more as though they were designed on the parlor-stove principle, to radiate the greatest quantity of heat rather than to preserve heat and convert it into motion.

The jacketing covering that portion necessary to be removed to adjust or repair the working parts might be so put on as to be readily taken off. There would be no necessity for finishing the covered parts further than to reduce the bolts heads and nuts to the proper dimensions, and true the surfaces which come in contact. The jacketing could be finished according to the taste of the manufacturer, and being attached to the engine in such a manner as to present a surface entirely free from bolt heads and like projections, there would be little difficulty in keeping it clean. Such an arrangement ought not to increase the cost of an engine; yet even if the cost should be increased a little, the investment would be a good one. We might then expect to see engines kept neater than the majority of them now are; there would be less excuse for an engineer if his machine was not clean. A saving of fuel would reduce the expenses of proprietors and lessen the labors of firemen; engine rooms would not be the ovens they now are, and promote the health and comfort of engineers.

J. H. F.

Heat and Force.

MESSRS. EDITORS:—I am of the opinion that your correspondent's explanation on page 260, current volume, of the difference between the amount of heat and equivalent mechanical force contained in combustible substances and that which can be practically obtained does not accord with all the facts which may be adduced. After attributing the loss to imperfect combustion, and the absorbtion of heat by the admission of too much air into the furnace, he concludes by saying, "that the true path for improvement would seem to be to select some substance to which heat can be applied at a greater intensity, and expand it to the temperature of things around us."

Take, for example, the amount of force developed by the detonation of gunpowder. Suppose a gun is charged with one pound of powder, and a shot weighing eight pounds, all the conditions being the most favorable for enabling the powder to exert its whole expansive energy in giving motion the to ball. The two ounces of carbon contained in the powder furnishes 1,750 units of heat, equal to 1,351,000 feet pounds, or equivalent to elevating eight pounds 31 miles. Hence should the gun be discharged vertically, making no allowance for atmospheric resistance, the shot should be projected 31 miles in perpendicular hight. In order to accomplish such a flight the projectile would require an initial velocity of upwards of 3,200 feet per second. That is about three times as high as that which would be practically attained, and to obtain it would require the application of a force nine times as great as would be developed by the deflagration of one pound of powder. In this instance the gases generated would be heated to a temperature of 5,000 degrees, which is ten times as intense as that of steam contained in the boiler of a steam engine. The combustion is perfect, and the amount of heat absorbed by the gun insignificant. Besides the very considerable amount of heat developed by the combustion of the sulphur has not been taken into account.

While the disparity is as great here as that observable in the working of a steam engine, the theory of your correspondent would have very little application. F. G. FOWLER.

Mechanicsburg, Ill., June 17, 1865.

An Engineer Puzzled.

MESSRS. EDITORS:—Gentlemen, as a constant reader of your paper and having done some business in the patent line through your office, I take the liberty of writing to you in regard to an answer I found in one of your late papers. It is this:—"C. H., of Pa. If your engine yields six horse power with 100 revolutions per minute and you increase the number of revolutions maintaining the same pressure, you will increase the power in proportion. 150 revolutions will give you nine horse power." A machinist who has charge of a shop and myself have had a long argument on that question. I maintain you are right and he contends you are wrong. He says the engine does not give out any more power, not a pound more than it did before making 100 revolutions. He contends the engine consumes it in extra friction; or he puts it in this way: An engine making 50 revolutions per minute; now suppose you increase it to 100, 150 or 200—you cannot drive any more machinery with it, as the power is consumed by the additional friction. He tries to prove this by a locomotive being only able with six feet drivers to make about a mile a minute empty, that is without any train. As he is considered by some of the men here as good authority on such matters I sincerely hope that you will reply through your paper and I think it will be the means of some more of the mechanics of this place taking your paper.

JOHN BOLTON.

Greenbush, N. Y., June 22, 1865.

P. S. The person referred to does not take your paper or I think he would know better.

[If all the power of an engine is consumed in friction, it would be better to let it stand still, and save the coal.—EDS.

A Third Kind of Clock with Invisible Works.

MESSRS. EDITORS:—No. 22 of present volume of your valuable paper is just received. The description it contains of "a curious clock" in San Francisco reminds me of a similar one I saw in New Orleans a few months since. It had also a glass dial, with a single, light, and very nicely balanced hand, but had no box or other mechanism on the short end of the hand, and no visible connection with anything but the pivot which passed through the dial. I asked if the movement was in the base on which the supports of the dial stood. The watchmaker said yes, but would give no further information. Upon looking as closely as permitted to, I saw a very small brass pulley upon the inside end of the pivot. This led me to think that it was connected with the movement by a very fine band of some gray-colored material, which the slight color of the glass shade and dial kept from sight. Possibly it might have been operated by nicely arranged magnets in the base, which could easily be done, but it was not moved by the method you describe. I have seen many other novel and ingenious clocks in that city. W. B. S.

Mobile, Ala., June 15, 1865.

Belts to Drive Flour Mills.

MESSRS. EDITORS:—Since reading the communication of J. H. Cooper on "Leather Belts," in your issue of July 1st, I am induced to send you the following:—Our engine is a 16-inch cylinder, two feet stroke, running 75 revolutions per minute with 80 pounds of steam. Belt 15 inches wide, driving pulley 8 feet diameter. The distance between centers of

pulleys 24 feet; the pulleys are on horizontal shafting. The shaft carrying the driver's pulley is about 3 feet higher than the crank shaft. The driving pulley revolves towards the other bringing the "slack" part of the belt on top and between the pulleys causing it to cover more of the circumference of the pulleys than if run the reverse. We use no tightening pulley and the belt never slips. We drive with this belt a flouring mill of 3 "runs" of stone with all the necessary machinery; the engine is rated sixty horse power. Experience teaches me to use pulleys of large diameter, good lengths of belt and quick motion to transmit the greater power.

W. R. COOPER.

Sag Harbor, L. I., July 3, 1865.

The Lead Ball on a Steam Jet.

MESSRS. EDITORS:—The explanation requested in your valuable paper, No. 2, current volume, in regard to a bullet sustained and rotated by a jet of steam or water seems to me to be of no very difficult character. It is well known that every such bullet or ball has two centers, the center of dimensions or imaginary one, and that of weight or the real one, as no ball can be manufactured so true that the weight would be equally distributed around the center of dimensions. If now the center of weight should be on the right hand side of the imaginary center, the left hand side being lighter, receives the force of the steam in a greater degree, and will, therefore, be turned from left to right, and vice versa. If a ball could be so constructed that the imaginary would be the real center, or if it could be placed over the jet in such a manner that the two centers would be in a vertical line and exactly over the center of the jet, then the ball would certainly not rotate. That part of the jet which has not actually to support the ball rises above it and surrounds it, thereby preventing it from falling off, or rather, on account of its unevenness, from being thrown aside; the water or steam around it, possessing exactly the same power as that beneath. If the diameter of the jet is smaller than that of the ball it will certainly not balance the same, but will throw it aside there being no power left to prevent it from falling. A. V. BRIESEN.

New York, July 5, 1865.

Large Pulleys vs. Small Pulleys for Belts.

MESSRS. EDITORS:—I have been much interested in the various articles, communications, comments, etc., that have appeared in your paper on the power-transmitting capacities of belts. There is, however, one point that I think has not been touched upon, and that is the diameter of the pulleys over which the belts run. I think that a belt traveling at a certain rate per minute will give more power, without being so tight as to break out the lace holes or heat the shafting, when driven by a large pulley than by a small one; or in other words, that a belt will impart more power when drawing a four-foot pulley at fifty revolutions, than when driving a two-foot pulley at one hundred revolutions.

It appears to me that it would take double the amount of power to make the belt slip on the large pulley that it would on the small one, and that doubling the diameter of the driving and driven pulleys is equivalent to doubling the width of the belt.

J. J. W. R.

Brooklyn, July 4th.

Peculiar Action of Belts Running on Each Other.

MESSRS. EDITORS:—As you and your correspondents are at this time interested on the subject of transmitting power through belts I would suggest an idea for your consideration which is not generally known by those who peruse your valuable paper; thus two belts, one running over the other will convey more power through them than one alone would of the same tightness. If we stitch the two belts together, however, so that they have to move as one belt they will not drive more than one half the load that they would if left to run over each other, independently. ANDREW B. ARNOLD.

Newark, N. J, July 5, 1865.

[Mr. Arnold is a close observer of long experience in machinery and we place great reliance on his opinions. The case he mentions is an interesting one and doubtless occurs from the fact that where one belt runs on the other, both being detached, each retains its individuality and transmits the force due to its velocity and width; where both are stitched together they become one, with only the tension and friction due to their width, length and velocity. We shall be glad to have the opinions of our readers.—EDS.

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week; the claims may be found in the official list:—

Skate—This invention provides a means for keeping the feet warm while skating; and this is effected by arranging a heating chamber under the foot-plate of the skate, into which may be readily placed any heated substance or body, such as soapstone, or any heating medium, such as a burning lamp; and in this way the foot-plate of the skate is kept warm, and, consequently, the feet from becoming numb with cold, and thus the pleasure of skating, particularly in the case of ladies, is greatly enhanced. The inventor of this improvement is O. W. Tatt, of No. 60 Pine street, New York City.

Hand-washing Device for One-armed Persons.—Our recent war has suggested many improvements for the benefit and comfort of our soldiers, and this is one worthy of especial attention. Perhaps no person, unless he has lost an arm or hand, can fully comprehend the difficulty of washing his remaining arm and hand. The patentee of this invention has been afflicted with the loss of one arm, and his device answers the purpose for which it is intended in a very satisfactory manner. It consists in the use of a sponge, or other suitable material, fixed to the upper surface of an open frame fitted to slide in a bed-plate, capable of being attached to the side of a washstand or elsewhere, its position being inclined so as to permit any water expressed from the sponge to run off from it through a channel in the bed plate. The hand or arm may be soaped and rubbed upon the sponge, and in this way a thorough washing or cleansing thereof can be easily and quickly effected. The inventor of the above is Gustave Dieterich, of 37 Park Row, New York, who may be addressed for the purchase of the patent or rights to manufacture.

Forging Machine.—This invention relates to a machine for forging various articles, such as nails, file shanks, spindles, etc. The invention consists in the employment of two pairs of hammers arranged and operated so as to approach and recede from each other, alternately, in pairs, and using in connection therewith a stop mechanism, feeding and cutting device, and certain other parts, whereby a simple and automatically working device is obtained for the purpose specified. John C. Jewell, of Boston, Mass., is the inventor.

Breeching Hook for Carriages,—The object of this hook is to facilitate the freeing or letting loose of a horse from the shafts of vehicles in case of sudden accidents, and consists in a novel construction of the breeching hooks, whereby the breeching straps disconnect therefrom, simply through the forward movement of the horse within the shafts, the traces, however, first having been unhooked or otherwise disconnected. And in addition to the above this hook also enables the breeching straps to be fastened and unfastened with more ease and rapidity by hand than with the use of the old styles of hooks, and it is in every respect greatly superior to them. Edwin Brown, formerly of Leominster, but now of Boston, Mass. (care of Messrs. Chickering & Sons), is the inventor.

Grain Separator.—This invention relates to a machine for separating impurities from grain, and also for separating one kind of grain from another, such as oats from wheat, etc., and it consists in the use of a series of screens and discharge spouts arranged relatively with each other in such a manner that the grain will be subjected to repeated screenings and thoroughly cleansed from all impurities, and one kind of grain separated from another, a blast fan being used and also a peculiar feeding spout in order to render the operation perfect or complete. Julius Tomlinson, of Newburgh, Wis., is the inventor.

Buckle for Skates and Other Purposes.—This invention consists in providing supplementary bearings for the journals of the tongue of the buckle, which bearings are behind the bearings which hold the said journals when the buckle is in use, and are separated therefrom by a ridge, over which the journals pass, when the journals are to be moved from one to the other. The effect of this construction is to enable the tongue to recede from the front of the buckle where the bite is made on the strap, thereby releasing the strap without difficulty and without requiring that it be first pulled out from the loop of the buckle. B. S. Lawson, 294 East Broadway, New York, is the inventor.

Bending Metal Plates.—This invention relates to a device for bending metal plates, and is more especially designed for bending armor plates for ships and other war vessels, so that they may conform to any part of the sides of the vessel and fit snugly thereto. The invention consists in the employment of a series of adjustable bars in connection with patterns and clamps, constructed and arranged in such a manner that the bars may be very readily adjusted to form a curved or winding bed corresponding to any portion of the exterior surface of the hull of a vessel, so that each plate may, with the greatest facility be bent to conform to the portion of the vessel to which it is to be attached. John W. Easby, of Washington, D. C,, is the inventor.

Head Rest for Car Seats.—This invention relates to a head rest for car seats which can be readily attached to or detached from the seat without in the least degree injuring it, and is of such a form and construction as to admit of being carried in a traveling bag or even about the person. The advantages of this are of course manifest to all, as it promotes not only the comfort and ease of the person, but also relieves a journey of the tediousness usually attending it, and supplies a want heretofore long felt. W. R. Phelps, of Elizabeth, N. J., is the inventor.

Hand Stamp.—This invention relates to certain improvements in that class of hand stamps in which a chemically prepared or inked ribbon is used to furnish the types with the requisite supply of ink or other material to produce the desired impression. The invention consists, first, in the employment of an adjustable head carrying the reels on which the ink-prepared ribbon is wound, in combination with the longitudinally sliding stem to which the handle is attached, and with the type plate in such a manner that easy access can be had to the reels and ribbon, and that the head with the type plate can be turned on the stem in either direction according to the direction in which the impression is to be taken on the paper. The reels lie in cavities in the sides of the head, the end pieces of which form the bearings for the axles of the same. The type plate is secured to the head by a nick and segmental slot in combination with a friction spring, in such a manner that the same can be readily removed and replaced or taken out to change the types, and when in position it is not liable to work loose spontaneously. The table which supports the material on which the impression is taken is made adjustable and removable so that its hight can be regulated or that it can be taken off and replaced at pleasure. Horace Holt, of Brooklyn, N. Y., is the inventor, and has assigned his right to W. W. Secomb, 264 Broadway, New York.

Beater Press.—This invention relates to certain improvements in that class of presses in which the article or substance to be compressed and baled or packed is previously compacted in the press box by means of a beater which is so arranged as to serve the office of a beater and follower. The invention consists in a novel arrangement of levers and a rope in connection with a suitable windlass whereby a very compact and powerful lever arrangement for operating the follower is obtained. The invention also consists in an improved windlass so constructed and arranged that it may, by a very simple manipulation, be made to operate the beater or follower in either capacity, that is to say when worked as a beater or follower. The invention further consists in certain means for facilitating the heoping of the bale and its discharge from the press box. Loyal C. Field, Galesburg, Ill., is the inventor.

THE "American Sleeping Car Company," which proposes to "construct, run and operate," has just been incorporated by the Legislature of Connecticut.