Correspondence

A Kind Word from California.

MESSRS. EDITORS:—We notice with much pleasure the beautiful typographical appearance of your noble scientific journal. We can appreciate such a journal. It speaks in thunder tones for the genius and skill of our working men; those that work with the brains, and those who work with the strong arms of sturdy working men. How proudly does your journal show forth the onward progress of American industry! Amid the roar of cannon aud rattle of musketry, and high o'er all, the din of battle, there is a voice echoing in trumpet tones the triumphs of labor.

Deeply as we feel for the condition of our unhappy country in this calamitous war, we have no doubt of its final glorious results. Lamartine says, "Revolutions are mercenary;" and we must look upon the present one as designed to purge and purify our country of those evils which have been gathering in the body politic like some great and fearful festering sore, its heart and head full of deathly gangrene, and from which our nation could only be relieved by the sad yet needed surgical operation of the patriot's sword, and the purifying influence of a patriot's devotion that demanded a rebaptism of human blood.

Sad, sad as this may be, this seems to be the only alternative, and while our humanity is touched by this needed remedy, we look forward to a speedy convalescence and ultimate recovery of our beloved country from these trials, for all find a great assurance and a confiding faith that a nation that can proffer a treasure of $500,000,000 and 600,000 volunteers to defend its Constitution and its flag, that country can never be cast down or destroyed, and while inspired with all these hopes, we can also look to that almighty energy that is acting upon men under all these discouraging events, and that shine but with such alluring emblems of a nation's wealth, as is shown through the columns of the SCIENTIFIC AMERICAN, whose glad face is welcomed world-wide as one of the greatest evidences that not even the calamity of a war can hinder the onward triumphs of the genius of industry in the American people. Fully sympathizing as we do with love of human progress, we beg to announce to you that with a desire to make known all valuable inventions in every part our country, we tender to the inventors everywhere, on the Atlantic, through you the use of our columns freely to illustrate by plates and engravings their new inventions, and shall be most happy to facilitate them in their enterprises to the utmost in our power, hoping by so doing to bind more closely in fraternal bonds the Atlantic and the Pacific; while we most devoutly pray that God in his good providence may cause the right to prevail in this great and fearful conflict, so that war may cease, and the priceless blessing of a reunion of all our country may soon be heralded over the world, and that we may soon be able to show the world the triumph of our inventions and the proofs of our greatness, and the boundless sources of our wealth, North and South, East and West, by the union of a people whose wealth and strength, and greatness is in and of themselves.

With best wishes for the prosperity of human labor and human progress, I am, truly yours,

COL. WARREN,
Editor *California Farmer*.

San Francisco, Jan., 1862.

Iron-Plating for Ships.

MESSRS. EDITORS:—A regular reader of your paper, my attention has been arrested by your remarks in your issue of the 8th inst., under the heading of "Iron Plating—Is the *Warrior* a Failure?"

The best method of mailing ships of war has become a question of world-wide importance. Thus far there are only three distinctly different methods that have been pursued. The English and French practice hitherto has, we believe, been confined to that of solid iron plates of about four and a half inches in thickness, those upon the *Warrior* being fifteen feet in length and three feet in width, tongued and grooved. Another method proposed is that of successive layers of plates to an equivalent thickness, breaking joints longitudinally and vertically. The last is that of parallel bars placed lengthwise upon the sides of the vessel and secured as indicated by the method which the government has adopted in mailing the vessel recently launched at Mystic River, Conn., and now in the harbor of New York for completion.

Considering that *La Gloire*, the well-known French mailed-steam war vessel, is now in the harbor of Cherbourg undergoing replating, from defect it is said, such as the trial trips of the *Warrior* have demonstrated, and waiving the consideration of other defects of construction, indicated by her "laboring badly in the sea," there is reason to believe that this method of mailing may be regarded substantially as a failure. That solid iron plates will offer greater resistance to the impact of shot and shell than successive layers of plates of the same thickness or even parallel bars, may, as you suggest, be true, but there are objections to their use in other respects, which seem absolutely insuperable. In the case of the *Warrior*, and we believe it is the course pursued with the other vessels of the English and French navies, the plates are placed lengthwise upon the sides of the vessel, tongued and grooved, and forming as close and perfect a joint as possible. Considering the undulatory motion of a vessel at sea, each of these plates may be regarded as a lever fifteen feet in length, the upper and lower corners becoming alternately fulcrums, by this means causing a constant working of the plates upon the sides of the vessel, opening the seams vertically, and producing in the end the inevitable destruction of the vessel. Especially, considering the method of fastening adopted in the case of the *Warrior*, the bolts passing entirely through the hull of the vessel, extensive leakage could not possibly be avoided. While, therefore, as you suggest, "New York and Hoboken" may be safe from the attacks of this redoubtable sea monster, we think it tolerably well demonstrated that solid iron plates for mailing war ships "are a failure." Whether the other methods—both of which have been adopted in the construction, first, of the Ericsson battery, and, second, the Mystic vessel, yet incomplete—will prove to be wholly unobjectionable remains to be seen. That they will not be liable to those that have revealed themselves in the construction of the *Warrior* and *La Gloire*, is quite evident. The method adopted in mailing the vessel built at Mystic seems to combine all the advantages attainable by iron armor. It may be put on of any degree of thickness, the bars being narrow and placed lengthwise on the ship, it may be called the iron-planking method, and, besides avoiding the straining influence upon the sides of the vessel, which solid plates insure, they may be caulked and cemented, as the hull is.

Other advantages will readily suggest themselves in this method, but I intended no general discussion of this subject, but merely to draw attention to the distinctions between solid iron plates and other methods for mailing.

W. L. B.

Washington, D. C., March, 1862.

The Motion of Rockets.

MESSRS. EDITORS:—In the SCIENTIFIC AMERICAN of March 1st, in answer to my remarks of Feb. 8th, Mr. Potts repeats, in substance, his opinion that the cause of motion is by the resistance of air to the issuing gas, and that in a vacuum "it is doubtful if there would be any motion."

I had exhibited the opposite opinion, by supposing a cylinder containing steam, or other gas, surrounded by air compressed to the same density, when no motion, or tendency thereto, would exist, but by relieving the density of the air, the contained gas would become available for motion, in proportion to the tenuity (misprinted density) of the air, and that in a vacuum the action would be perfect.

Mr. Potts now states my view would be correct for the initial impulse, but would not hold good any further, and presents the following illustration as proof of the correctness of his opinion, viz.:—The safety-valve pipe to a boiler containing steam is supposed to be suddenly relieved of its weight and exposed to a vacuum, when there would not only be no additional pressure of reaction, but a more rapid exhaustion of the steam.

The relavency of this example is not perceived unless it suppose the exit end alone of my cylinder be thus exposed to a vacuum, entailing a freer issue of gas, without increasing the propelling reaction, which is similar in principle to the one-sided result of the "bow and book" experiment.

The cylinder, however, has two ends, and the question requires them both to be under the influence, and in that case, whether the surrounding be dense, rare or void, the escape of the gas is the measure of the motion.

T. W. B.

Cincinnati, March 5, 1862.

Suggestion to Photographers.

MESSRS. EDITORS:—A radical defect in nearly all liknesses taken by the new method now in use, arises from the fact that the sitter being in a novel situation unconsciously assumes a constrained and unnatural expression of countenance, and having no means of correcting this, it is of course repeated in the picture. Hence, so few are entirely satisfied with their photographs. The improvement we suggest, is designed to obviate this defect, by attaching to the camera an ordinary plane mirror, so adjusted that the sitter, instead of staring into blank space with a feeling of what a ridiculous part he is playing, shall look at his own reflection in this glass during the entire operation. He will thus be enabled at once to assume and retain his ordinary expression of countenance, or take any other that best pleases himself. The picture will be an exact reproduction of the image in the mirror, and cannot fail of being perfect in every respect.

EDWARD L. PORTER.

New York, March 4, 1862.

Infringement Previous to Re-issue.

MESSRS. EDITORS:—You will oblige me by answering the following question:—If A takes out a patent and B and others infringe the provisions of said patent, and, subsequent to said infringement, A surrenders said patent, not for any defect that would render it void at law, and a new patent is granted, can A recover of B for a violation of the old or surrendered patent; or, in other words, does the surrender and re-issue of a patent release all that infringed the provisions of the original patent?

I. C.

Eaton, N. Y., March 1, 1862.

[The surrender of a patent for the purpose of obtaining a re-issue for any cause, invalidates all claims for infringements before the surrender; under such circumstances the patentee having abandoned his original patent has nothing upon which to found his claims against infitngers. His right to sue for an infringement of his rights takes date from the re-issue of his Letters Patent.—EDS.

Questions for Millers.

MESSRS. EDITORS:—I should like to see the following questions answered by some experienced miller through the columns of the SCIENTIFIC AMERICAN:—A burr millstone, 3 feet 10 inches in diameter and of medium quality, as regards pores or openness, as termed by millers, making 135 revolutions per minute, what amount of draft should the furrows have, and what should be the number of furrows, what their shape, &c., to suit 16 feet length of bolting reel 30 inches in diameter, one half No. 9 cloth, balance No. 10? How much ought such to bolt per hour, ordinary grist flour? Is a circular as good as a straight furrow? Should said stone be faced to the eye? As their is so much difference of opinion among millers in regard to the amount of flouring face, I would like to hear views of millers on the subject.

A YOUNG MILLER.

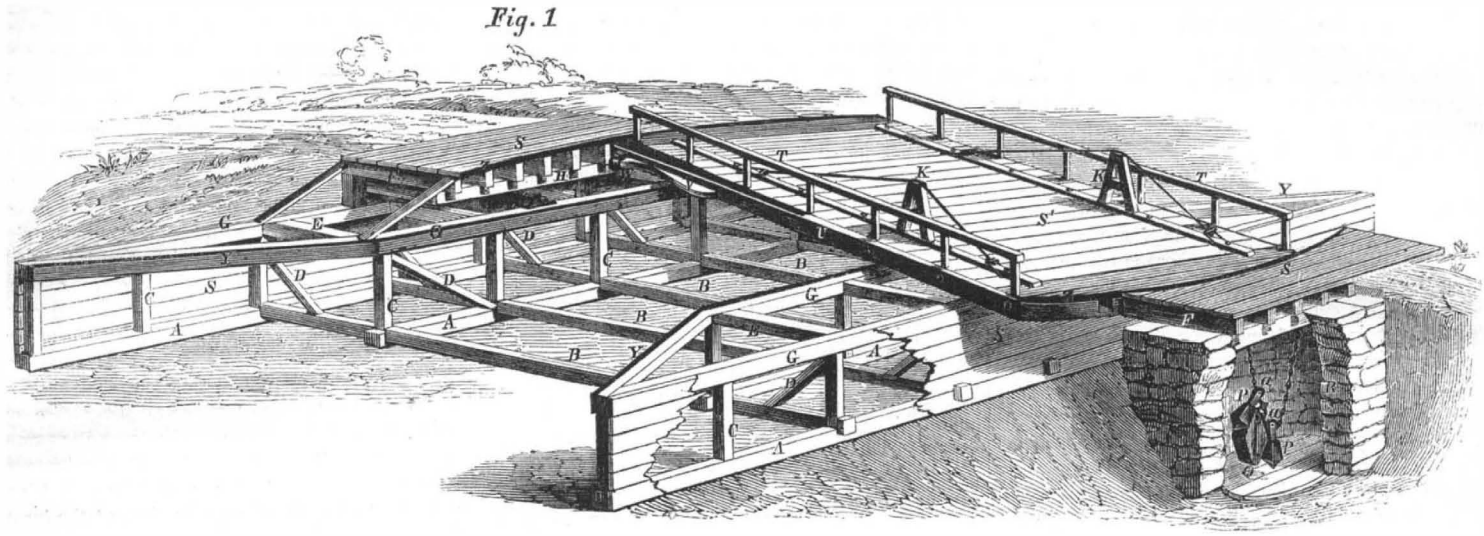
SCOTTISH IRON TRADE.—In 1861 there were 1,050,000 tuns of pig iron manufactured in Scotland, by 123 furnaces. The number of tuns shipped to the United States, was 54,482, against 77,632 in 1860. The local consumption in Scotland is 364,000 tuns per annum: all the rest is exported. Germany takes no less than 94,000 tuns annually of this peculiar pig iron, and France, 62,000. Glasgow, on the river Clyde, is the greatest place for building iron steamships in the world. In 1861, there were 86 steamers finished, and there are now 34 new vessels on the stocks.

CEMENT FOR WOOD AND GLASS.—Dissolve common glue in a carpenter's glue pot, and add to it finely sifted wood ashes, until it becomes somewhat thicker but still pasty. Apply it while hot, and press the edges of the glued article firmly together. This cement is said to be very adhesive for wood.

Self-Acting Drawbridge for Canals, &c.

Canal bridges, as heretofore built, are fixed structures, and are usually elevated at such a hight above the canal that boats can freely pass under them. This class of bridges necessitates the building of an inclined elevated roadway for each. The reason why such bridges have heretofore been exclusively used on canals in preference to flat drawbridges, which do not require an inclined roadway, is probably owing to their costing so much for their practical working, as each requires to be opened and closed by an attendant.

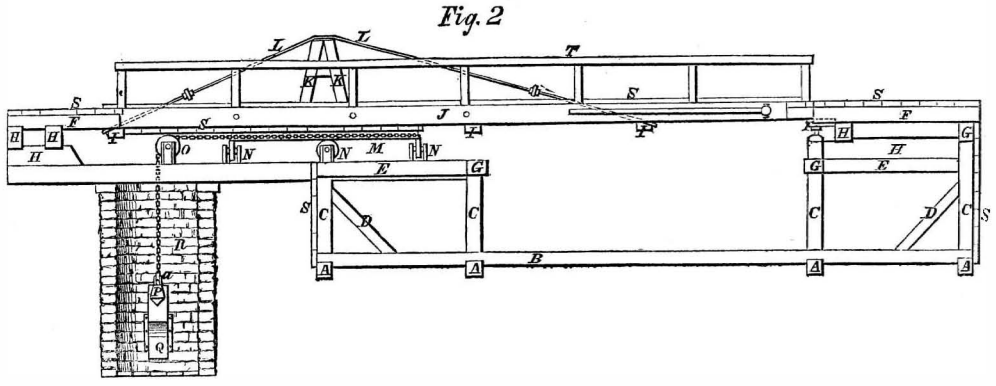
Fig. 1



SCHNEIDER AND MONTGOMERY'S SELF-ACTING DRAWBRIDGE FOR CANALS, ETC.

The accompanying engravings represent a self-acting drawbridge which is opened by the boat pressing against it while passing through the canal and which closes itself after the boat has passed. No attendant is therefore required for it. Fig. 1 is a perspective view of the bridge with its swing draw partially open. Fig. 2 is a side elevation showing the wheel, chain and rollers on the under side of the swing platform, and Fig. 3 is a section top view, showing the adaptation of the bridge to a double channel, in which case it swings on a central pier. Similar letters indicate like parts on all the figures. The figures will be more readily understood by bearing in mind that this is a swing bridge, and that the roadway oscillates on a vertical axis, and it has its wheel table supported on friction rollers so that it may be very easily turned.

Fig. 2

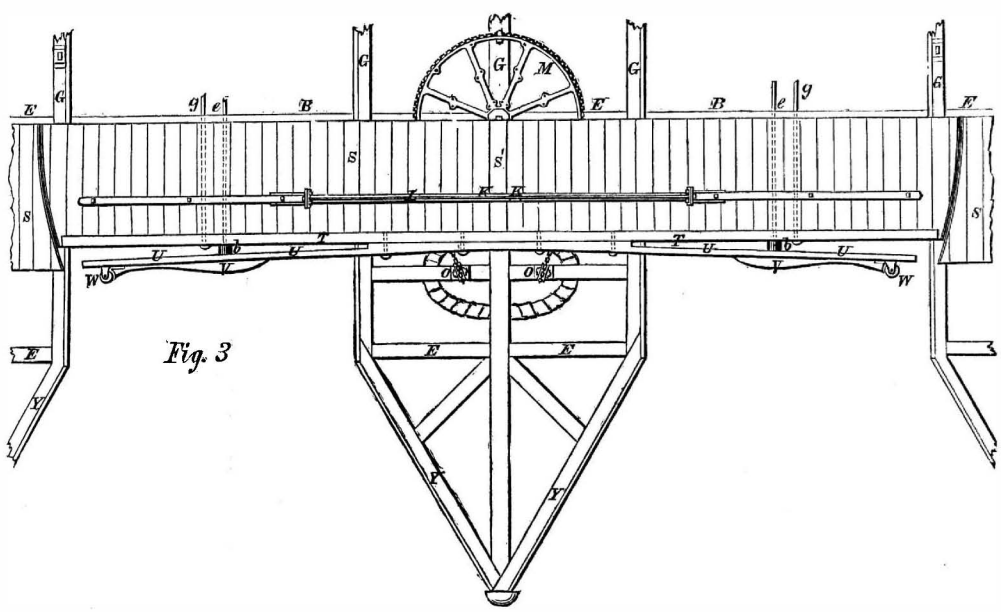


A B represent the mud sills of the bridge; they are placed under ground in the bottom of the canal, but are shown in the figure so that the entire construction may be more clearly explained. C are the posts supporting the side frame work; D are braces; E are cross timbers of side work and are level with the water; Y are the guides to the channel way; F are timbers supporting the planking of the roadway at the end of the bridge; G are string pieces on a level with the water. H are timbers to raise the cross timbers, E, to the proper hight; I are cross timbers under the bridge; J are string pieces of the bridge; K is the gallows frame secured to the bridge over which the bracing bolts, L, pass; M is a large wheel secured to the under side of the bridge, and resting on friction rollers, N, on which it and also the bridge revolve. The wheel, M, is a large pulley with a groove in its periphery to receive the chain shown, which is made fast at the forward side and is drawn around it, then passes over the pulleys, O O, and down into the pit, R, as shown in Fig. 2.

The chain is secured to the hollow weight, Q, and is made in two parts for the purpose of enabling it to be properly loaded. On either side of the large weight, Q, is a smaller one, P, with a pulley, *a*, secured to its upper end, and through which the chain passes freely. The balance weights, P, are for taking up the slack of the chain when the bridge is turned in either direction.

S represents planking, and S′ is a loose plank on the roadway to enable a person to reach the center and friction rollers under the bridge to lubricate them; T is the railing.

Fig. 3



A buffer is secured on each side at the lower part of the railing of the swing roadway; U is the springs of the buffer made of plank and stiffened behind with india rubber or other springs, *b b*. V is a bumper fastened to the plank springs, U U. It has a roller, W, in front of its forward end as is more clearly shown in Fig. 3. A boat in passing through the canal at its usual speed presses against the bumper, V, and plank spring, U; and before the tension of the spring is taken up, the bridge starts from its position, and commences to turn. As the boat advances, the rollers, W, press against its sides, thus allowing it to pass through without breaking and wearing the swing. The center screw and step below the turn-table wheel, M, can be raised or lowered as may be found necessary. By reference to Fig. 1 it will be noticed that when a boat is passing through the canal and is moving the swing roadway, one side of the chain is drawn up on the wheel, M, also the weight, O, leaving one of the small weights, P, to take up the slack and keep the chain taut around the periphery of the wheel. As soon as the boat has passed through the large weight will draw down the chain, and thus turn the wheel, M, bringing the bridge in a line with the roadway and the forward end of the bridge resting on the rollers, W, and the roadway is then open for carriages and passengers to cross. Such bridges are also well adapted for all navigable streams where the water is uniform in depth.

In cities, towns and villages through which canals pass, the bridges in general are few in number and are ugly elevated structures, and all the general traffic is directed through the streets in which they are erected. Such a bridge as the one represented may be economically applied for every street that crosses a canal, and thus afford superior facilities for public communication.

One of these bridges has been put up on the West Branch of the Susquehanna canal at Williamsport, Pa., and the President, Directors and Superintendent of the Canal Company certify that it was in operation all the boating season of 1861, and "that it is on a level with the street, and only about two feet above the water in the canal; that it is readily opened by a boat passing, and always closes itself; that it has been severely tested by the passage of heavily loaded wagons, and appears as permanent and durable as the ordinary bridge. Boatmen do not object to the bridge as any obstruction." Patented Sept. 4, 1860.

For further information address Louis Schneider, the assignee of the invention, Williamsport, Pa.