Scientific American.

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY

At No. 37 Park-row (Park Building), New York.

O. D. MUNN, S. H. WALES, A. E. BEACH.

TERMS—Two Dollars per annum.—One Dollar in advance, and the remainder in six months.

Single copies of the paper are on sale at the office of publication, and at all the periodical stores in the United States and Canada.

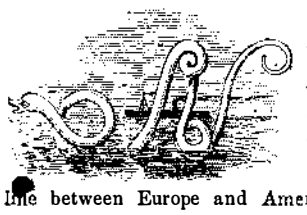
Sampson Low, Son & Co., the American Booksellers, No. 47 Ludgate Hill, London, England, are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.

☞ See Prospectus on last page. No Traveling Agents employed.

VOL. III., NO. 3.....[NEW SERIES.]....*Sixteenth Year.*

NEW YORK, SATURDAY, JULY 14, 1860.

THE NEW ATLANTIC TELEGRAPH.



NOW, since the *Great Eastern* is safely moored in New York harbor, our hopes are once more revived about the establishment of an ocean telegraph line between Europe and America. As neither the great mistake committed at launching the mammoth steamer, the explosion that took place on board, nor the quarrels of its stockholders have prevented her final triumph, it is not altogether impossible that the long silent Atlantic Cable, under the redoubtable galvanic volubility of M. De Santy, may yet be made to speak. Steamships are very well in their way, but the present *times* demand more rapid communication between the Old World and the New. We are impatient of tarrying from ten to eleven days for the latest news by the swiftest steam clippers; and as we can telegraph 3,000 miles in a few seconds, an Atlantic telegraph line must and *will* be established, not many years hence. It is just as easy to telegraph across the ocean as to communicate electrically between New York and Newfoundland. All that we want to do this are well-known agencies applied in the best manner. As the resistance to an electric current is inversely as the mass of the conductor, the larger we make the cable, the easier will it be to send messages by it; a cable of twice the diameter of the one that has been laid would offer only one-fourth of the resistance presented by the original. From this law it is easy to arrive at the conclusion that, with a suitably enlarged cable, submarine ocean telegraphing is quite practicable, especially if the cable is so made that electricity of *quantity*, instead of intensity, can be employed to operate the instruments; because the evils of inductive resistance would thereby be obviated. There has been some talk, recently, of again trying the old cable, by taking up the present "shore ends" and putting down larger ones; but no permanent success can ever be achieved on this route without a new and much larger cable. And when we remember the many failures that took place in laying the late one, it will be seen that quite different agencies are necessary for one of more massive proportions. It is not impossible, however, to obtain them; indeed the main one is at hand, namely, a suitable vessel. The *Great Eastern* appears to have been designed for just such a splendid operation. It has been stated that she moved among the ocean billows without experiencing any of those violent oscillations which rendered the running-out of the cable so hazardous with those two "little boats"—the *Niagara* and *Agamemnon*. This huge steamer is capable of carrying and laying a massive and appropriate ocean cable, and it would be in vain to try any other mode for accomplishing such an object by the old route—from Newfoundland to Ireland.

There are no indications, at present, of the above-suggested project being attempted; still, there is plenty of "sea-room," and we are pleased to learn that a new company is "sailing on another tack," and with good prospects of making a successful voyage. This is the "North Atlantic Telegraph Company," the projector of which is Col. Tal. P. Shaffner, of Kentucky, who has been in Europe during the past year, organizing measures for the undertaking. His object is to lay a telegraph line by means of short cables and way-stations on land in the northern regions. The route for the first length is from the North of Scotland to the Faroe Islands, with a cable 250 miles long; the next cable is to be 350 miles, to reach Iceland; the third, about 550 miles to Greenland; and the last about 600 miles, to reach the coast of Labrador in America—thence down through Canada. The aggregate length of this submarine line would be 1,750 miles; the land lines 300 miles, or a total of 2,050, the same length as the old Atlantic cable. These short cables can easily be laid, and operated for a certainty, because there are some larger marine lines than these in successful operation in Europe. What then are the objections to this route—to the North Atlantic Telegraph? None whatever; all persons should wish it success, and it affords us pleasure to state that favorable measures are in progress for carrying out the enterprise. In the month of May last, a deputation (among whom were the Right Hon. Milner Gibson, M.P.; Sir J. Duke, M.P.; Mr. T. W. Russell, M.P.; Mr. H. Pease, M.P.; Mr. J. A. Roebuck, M.P.; Hon. Sydney Smith, Postmaster-general of Canada; Captain Sir Edward Belcher, R.N.; Captain Collinson, R.N.; Captain Robinson, R.N.; Dr. Rae, Colonel Shaffner, Captain Young, Mr. J. R. Croskey, Dr. N. Shaw, Mr. C. Bischoff, Mr. J. Howard, Mr. J. Arrowsmith, Mr. J. Barrow, Mr. L. S. Magnus, Mr. W. Bevan, Mr. E. Wakefield, Mr. M. H. Chaytor, Mr. C. E. Deacon, and Mr. J. S. O'Beirne) waited upon Lord Palmerston to lay before him the plans for this new ocean telegraph line, and to solicit the British government to dispatch vessels for making soundings and otherwise surveying the facilities afforded by this route. The deputation was received with every mark of respect and favor, and Col. Shaffner explained the whole to the premier in a very able and satisfactory manner. The result of this is, that Col. Shaffner has conveyed to us the information that the British government has furnished a surveying ship, and he was to sail with it for Iceland and Greenland in the early part of this month. He also assures us that as much will be done by government patronage, for the North Atlantic Telegraph as was done for the old line; Captain Young, who accompanied Captain McClintock in his search for Sir John Franklin, has stated that the northern route is quite practicable, and he is well acquainted with the Arctic seas; and so we conclude that matters are progressing favorably for a new Atlantic telegraph.

THE DEATH OF CHARLES GOODYEAR.

"I know well that it is written in the Book of Genesis that God created all things in six days and that he rested on the seventh; but for all that, God did not create these things to leave them idle; therefore each performs its duty according to the commandment it received from God."—BERNARD PALISSY.

We are called upon to chronicle the decease, during the past week, of a man whose genius, whose patient labor, whose trials and privations have placed him foremost in the list of American inventors. Mr. Charles Goodyear died in this city on the 1st instant, after a protracted illness. The name of this great inventor has been familiar to the public for many years; yet few out of the circle of his immediate friends have known the story of a life so full of the strangest vicissitudes, ennobled by such a self-sacrificing and never-tiring devotion to one object, but saddened by so many sorrows that it sounds like a romance as well as a reality. He lived, indeed, to see his bright dreams realized; he lived to see the almost worthless gum with which the savages of Central Africa smeared their bodies as a protection from insects, become a staple of commerce, employing for its transport ships in every sea, giving employment to thousands of workmen and millions of capital, and entering into the arts, the sciences, the daily uses, and the mechanical industry of the highest civilized life. The man who accomplished all this has not lived without purpose or in vain. Yet it is impossible to give any complete idea of the price which was paid for these great results—the long toil, the suffering so cheerfully endured, the privations which none but a son of genius, living on his dreams could have borne, the failures, the disappointments, the mortification and the success which came at last so late that it was no longer worth wishing for.

The most striking point in Mr. Goodyear's character was his sunny and cheerful disposition. He lived a life of constant struggle, he was involved in long and painful lawsuits with those who pirated his inventions, he was necessarily brought in collision with many who were connected with him or opposed to him in business; many lost money by the connection; but such was the impression made by this simple-minded and enthusiastic dreamer that, at the hour of his death, he had no enemy living. His generosity, his animated and affectionate nature, his earnestness and enthusiasm made him friends everywhere, and he was fortunate, far beyond the usual lot of men, in exciting neither hatred or envy or malice.

We presume that the story of this eventful life will be made public in some more formal mode by the friends of his family, and we will not attempt to fully trace the progress of his inventions. It was in 1834 that Mr. Goodyear turned his attention to the manufacture of india-rubber. There was a mystery about this tropical gum which gave it a strange charm in his imagination. It was not an article of commerce, but appeared from time to time only as a rare curiosity brought from foreign lands. The savages who possessed it kept the mode of its manufacture a profound secret. It was found only under the burning sun of the equator, in the gloomy swamps of the unexplored Amazon or the jungles of Asia and Africa. Its nature was as mysterious as its origin, the chemists who examined it were baffled in their attempts to make it of practical use. Ingenious men, abroad and at home, had attempted to solve the mystery, but all had failed. That it was of immense value in the arts, to supply a thousand wants of civilized life, was obvious to all, but the elastic gum kept its own mysterious secret and there was no clue to the discovery.

To discover the secret and solve the problem became the dream of Charles Goodyear's life. The difficulties and failures which he encountered only made it more dear to him. He asked aid from men-of-science, but they discouraged him; his associates abandoned the pursuit in despair; his friends one after another left him, but he only clung the closer to his cherished faith. In one of the contests by which pirates of his invention sought to rob him of his rights, the veil was half withdrawn from the life of the inventor, and a few details of the privations which he endured were given. He was in such extreme penury that his bed was sold from under him; he was so poor that it was said he could not buy an ounce of tea on credit. In the dead of winter there was no food in his house and no fuel for fire. This was not the struggle of a few months only, but it was the story of years, for it was not till 1844, after ten years of toil, that he perfected and patented his discovery. His labor, however, did not cease, and even to the hour of his death he was devoted to the favorite pursuit upon which he lavished the immense sums which he received from his patents. His life was subject to the strangest vicissitudes. He went from a poor debtors' prison to a palace in Paris. The man who was an object of cold contempt in an obscure village, on account of his poverty, received the Grand Cross of the Legion of Honor from the Emperor Napoleon as a reward of his genius. In Europe as well as America his name was honored and his merits appreciated, but to the hour of his death he was the same enthusiastic and patient inventor. We have placed at the head of this article a beautiful sentence of Palissy, the potter, which should be the motto for every true inventor. Charles Goodyear has been well called the American Palissy, and to his last hour he acted on the principle that God did not create him to leave him idle.

THE "GREAT EASTERN" OPEN TO THE PUBLIC.

On Tuesday, last week, the noble steamship was opened to public inspection at the modest charge of *only* One Dollar per head. The directors, in our opinion, have made a great mistake in charging such an exorbitant admission-fee. We consider it a very unwise exaction; because the majority of our practical mechanics and the mass of our working people—the very persons who are most anxious to visit her—cannot afford to pay so much for the privilege. One dollar is quite a large amount to be taken from their moderate incomes; and hence, where ten thousand would visit her if the charge were only twenty-five cents (which we deem sufficient), not five hundred can or will pay one dollar. We would recommend the directors to change their programme of admission, and charge one dollar only on certain days—say two per week—and twenty-five cents during the other four. We venture to assert, positively, that more money will be made by such an arrangement, and more general satisfaction will be given to the people, than by pursuing the present course. There are many persons

who would rather pay one dollar than twenty-five cents, so as to view the whole vessel in quietness, without being crowded; but the mass of the people cannot do it; the above-proposed adjustment of charges, therefore, would accommodate all parties and none would have cause of complaint.

The *Great Eastern* lies at the foot of Hammond-street, North river. Strangers who come to visit her should take the Eighth-avenue cars from the lower part of the city, or the Ninth-avenue cars from Canal-street. On approaching this vessel at her dock, her great size effects the mind with surprise and wonder. She is a floating mountain of iron, and no work of ancient or modern times can be compared to her, for exhibiting the ingenuity and power of man over the elements of nature. The scene from her lofty deck is grand and exhilerating. About fifteen hundred persons have daily visited her since she was opened, but more may yet be expected. Her paddle wheel engines are the chief objects of attraction; they are splendid specimens of engineering skill and ingenuity. The screw engines are *squat*, and make but an indifferent show, but they are also good examples of mechanism. The engineers have been enthusiastic in their praises to us, regarding the ease with which the engines can be handled.

The bottom of the *Great Eastern* is somewhat foul with adhering sea-weed and barnacles; and but for this, it is said she would have sailed about two knots per hour faster, in which case she would have made the passage across the Atlantic Ocean in less than ten days. A French inventor made several experiments with a machine to clean her bottom while lying at Southampton, but he did little or no good whatever. It has been proposed to take her upon two of our large sectional docks joined end to end, and we think this could be effected. It is not merely cleaning but also painting that she requires below the water-line, and for this purpose she must be raised "high and dry." A large dock, capable of holding her, is now building at Birkenhead, England, and it is expected it will be ready soon after she returns. It is not yet decided how long she will remain here; we will give notice of this to our readers in due season.

THE RIGHTS OF JOINT PATENTEES.

We are often inquired of, in relation to the rights of joint patentees or joint assignees as amongst themselves. This is a question which is attended with no little difficulty, and for which it is impossible to give a satisfactory and complete solution. We shall endeavor, at least, to throw some light upon the subject.

When several persons respectively hold joint fractional interests in an entire patent, either as patentees or assignees, or partly of each of those classes, in what capacity do they hold those interests? Not as patentees, unless by some special agreement to do so. They cannot be made responsible for each other's acts. They cannot claim to act for each other. They cannot be compelled to act together for any purpose. Their interests are held in severalty. Their relations towards each other are analogous to those of tenants in common of real estate. Each may use the common property. Neither of them can prevent his co-proprietors from doing the same. (See Hindmarch on Patents, 68.)

Where there is no rule of reason or of law to the contrary, a person may confer upon another the right of doing whatever he might do by himself. In other words, as a general rule, he may alienate any interest he himself possesses. An owner of a fractional interest in a patent may therefore not only make, use and sell the thing patented, himself, but he may give a license to another person to do the same thing. Whether he may carry this privilege to any extent he pleases, and, if not, how he is to be restrained from going too far, are questions we shall not attempt to answer at present. We are only dealing now with the general rule and shall not discuss the exceptions.

But as no one of the joint owners can exclude his co-owners from the rights held under the patent, so neither can he grant an exclusive right to another person; as that would infringe upon the rights of his co-owners and would be effecting indirectly what he could not do directly.

But an exclusive grant of that nature would not be wholly void. It would only be so in those particulars in which the powers of the grantor had been exceeded. The grantee would not be liable to prosecution as an infringer, but he could not prevent the other co-proprietors of the patent, or their assignees or licensees, from making, using, or vending to others to be used, the thing which was the subject-matter of the patent.

Another question sometimes asked is as to the rights and remedies of the several proprietors of a patent in cases of infringement by third persons. It was held in the case of Whittemore *vs.* Cutter (1 Gallison, 429, 431) that an action for infringement may be maintained by all the parties, who, at the time of the infringement, are the holders of the whole title and interest. But suppose some of them should refuse to join in such an action, how are the others to obtain a remedy?

We cannot find that this question has evea been judicially settled. In Hindmarch on Patents (252) it is stated that "it has never been decided whether one of several patentees, or an assignee of a portion of a patent privilege, can sue alone for the damages which he has sustained by the infringement of the patent. There does not seem to be any good reason why such a part-proprietor should not be able to sue alone, although the language of the court of King's Bench, in a somewhat similar case (Weller *vs.* Baker, 2 Wilson, 423) seems to be an authority to the contrary." It appears somewhat singular that questions of this nature should not long since have been fully settled by the courts, not only of Great Britain but also of this country. Such, however, we believe to be the fact.

It was decided by the Supreme Court of the United States, in the case of Tyler and others *vs.* Tuel (6 Cranch, 324), that an assignee of a part of a patent right cannot maintain an action on the case for a violation of the patent, but this referred to a case where the fractional interest was determined by geographical lines. The assignee had not a fractional interest in the whole United States, but an entire interest in a portion of the United States, which has elsewhere been held to make an essential difference. The rule as to the disability of a grantee of an exclusive right in a fractional portion of the United States to bring suit is now changed (see Act of 1836, 314, and Wilson *vs.* Rousseau, 4 Howard, 686); but for the reason above given this has nothing to do with the question we have been considering.

It will be readily perceived that there are many difficult and perplexing questions which may grow out of the relation of the joint proprietorship in this kind of property, all of which require great caution on the part of those who are about entering into such relations.

JONES' BURNER FOR COAL-OIL LAMPS.

The accompanying illustrations represent an improvement in the burners of coal-oil lamps, for which a patent was granted to Edward F. Jones, of Boston, Mass., May 4, 1858, and it is believed that many persons are infringing it without being really aware of their liability.

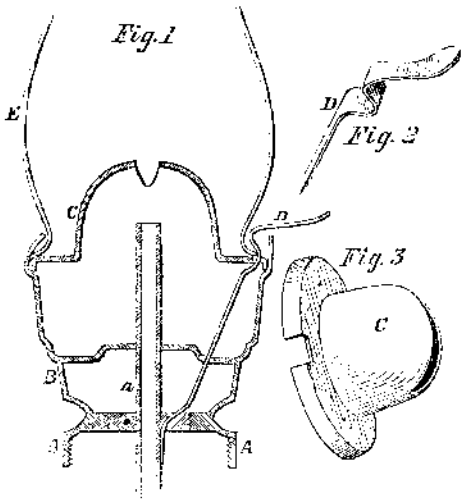


Fig. 1 is a vertical section of the entire burner; Fig. 2 is a view of the chimney spring-catch, and Fig. 3, a perspective of the cone cap. A is the screw ring which is fastened to the top of the lamp; B is the wick tube and cap socket which screws into the ring in the usual manner; C is the conical deflector which is detached, has a notch in its side, and fits into the top of the socket as shown; D is a spring which is soldered at one end to the wick tube, *a*, thence passes up into the notch of the detached deflector and holds in in place. This spring also holds the chimney, E, in position, so that it fullfils two offices, and a screw is not required for the purpose. The upper sides of the socket, B, and the bottom of the deflector cap, C, are perforated in the usual manner, for the air to pass through and upwards to supply the flame with oxygen. These devices and their combinations will be perfectly understood from the description given. The improvement affords a more convenient and simple arrangement than the common screw fastening for the chimney and fixed deflector.

The patent embraces two claims. It was first issued May 4, 1858, and the claims appeared on page 282 Vol. XIII (old series) SCIENTIFIC AMERICAN; then re-issued Jan. 11, 1859, and published on page 159, Vol. XIV of the same journal.

More information may be obtained by letter addressed to E. F. Jones, Nos. 35 and 37 Central-street, Boston, Mass.

RECENT AMERICAN INVENTIONS.

SAWING MACHINE.

This invention is an improvement in machinery for sawing out and tonguing and grooving stuff for packing boxes. It consists in the employment of a vibrating circular saw-frame, that is controlled by the operator, with a feed pressure roller for the purpose of feeding the stuff along until it abuts against a gage head, when the feed action is stopped, and the saw in the frame brought up so as to cut the board into pieces of any desirable length to be determined by the gage head; the saw and feed roller are operated by belts that receive motion from a common shaft, so that neither the motion of the saw nor that of the feed roller will be stopped while the main shaft is in motion. Combined with the table upon which the stuff is sawed up in lengths is arranged a movable gage board for jointing or cutting the boards that have passed through the first operation, to any desirable width in circles, and also a tonguing and grooving cutter, so that the three operations may be performed on one and the same table. The credit of this contrivance is due to Timothy Drake, of Windsor, Conn. Ill.

COTTON BALE TIE.

The demand for non-combustible metal hoops in place of combustible rope to bind cotton bales, having of late become very great, numerous devices for locking the hoops have been contrived. The one now before us is certainly an exceedingly simple and effective one. It consists simply of a flat plate with a slot cut obliquely through it near one end. The two ends of the hoop are slipped through the slot, and the tie plate is turned a certain distance. Thus turning the plate bends the ends of the hoop so that a shoulder is formed. This shoulder and the outward pressure of the cotton renders impossible the unlocking of the hoop except by the application of a pair of pincers to the same. The patentees of this invention are Z. W. and E. D. Lee, of Blakeley, Ga.

ROCK DRILL.

This invention has for its object the operating of a plurality of drills simultaneously by the rotating of a single shaft, and is more especially designed for operations on a large scale, as in mining and quarrying, where a series of holes are required to be drilled in a right line for the purpose of detaching by blasting large masses of rock in line, or co-incident with their cleavage or seams. The invention consists in the use of two clamp-bars connected by joints to boxes placed on conical or taper guide bars and connected to a rising and falling arm whereby the desired end is obtained. This improvement was designed by Francis Schwalm, of Joliet,

PRINTING PRESS.

J. A. Smith, of Fond du Lac, Wis., and Isaac Orvis, of Oakfield, Wis. (administrator of the estate of L. M. Orvis, deceased), have obtained a patent for an improved press, designed for printing from a continuous roll of paper, and possessing automatic mechanism for feeding the paper to the forms, and for printing *both* sides of the paper during one passage through the press, and cutting it into sheets of proper length; the paper being also moistened or sponged during the operation of printing. The claims for this ingenious invention were published in our last number.

BRIDGE.

This invention consists in a certain construction of a bridge of cast and wrought iron and wire rope, whereby the truss and suspension principles are combined in an advantageous manner, and a bridge of great strength and stiffness is obtained with extreme lightness. The credit of this contrivance is due to J. P. Fisher, of Rochester, N. Y., and the claims were published in our last number.