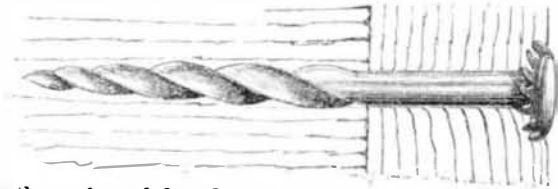


A NEW NAIL.

This is a new form of nail, the peculiar features in which are its screw, shank, and the head concave underneath and provided with teeth. In using it, a hole is first bored in the wood as for an ordinary screw; the nail is then driven in by a hammer, when the teeth about the head will readily catch



in the surface of the adjacent wood. The nail thus secured can neither be turned nor withdrawn without destroying in whole or in part the fibers of the wood.

The invention will doubtless be of advantage in fastening packing cases for shipping, as, in addition to forming a strong connection, its removal, in case of any tampering with the contents, can be at once evidenced by the condition of the box.

Patented March 17, 1874, by Mr. Joseph Lowensohn, of Berlin, Prussia.

CONCEPTION OF THE TELEGRAPH.

[From advance sheets of the Life of S. F. B. Morse, by S. I. Prime.]

The packet ship Sully, Captain Pell, sailed from Havre on the 1st day of October, 1832, for New York. Among the cabin passengers were the Hon. William C. Rives, of Virginia, returning with his family from Paris, where he had been as Minister of the United States; Mr. J. F. Fisher, of Philadelphia; Dr. Charles T. Jackson, of Boston; Mr. S. F. B. Morse, of New York; Mrs. T. Palmer, Miss E. Palmer, Mr. C. Palmer, Mr. F. Palmer, Mr. W. Palmer, Mr. J. Haslett, Charleston, S. C.; Mr. Lewis Rogers, Virginia; Mr. W. Post, New York; Mr. Constable, New York; Mons. de la Cande, Mons. J. P. Chazel, Charleston; Mr. A. Scheidler, Frankfort, Germany; Mr. and Mrs. Burgy, and others.

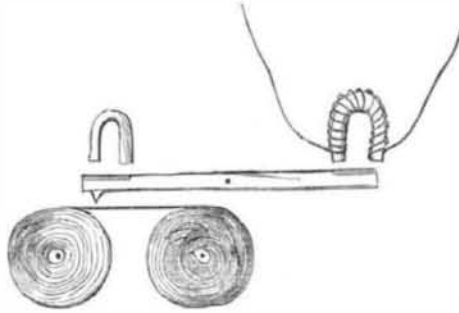
In the early part of the voyage, conversation at the dinner table turned upon the recent discoveries in electro-magnetism, and the experiments of Ampère with the electro-magnet. Dr. Jackson spoke of the length of wire in the coil of a magnet, and the question was asked, by some one of the company, "if the velocity of electricity was retarded by the length of the wire?" Dr. Jackson replied that electricity passes instantaneously over any known length of wire. He referred to experiments made by Dr. Franklin with several miles of wire in circuit, to ascertain the velocity of electricity, the result being that he could observe no difference of time between the touch at one extremity and the spark at the other. At this point Mr. Morse interposed the remark: "If the presence of electricity can be made visible in any part of the circuit, I see no reason why intelligence may not be transmitted instantaneously by electricity." The conversation went on. But the one new idea had taken complete possession of the mind of Mr. Morse. It was as sudden and pervading as if he had received at that moment an electric shock. He withdrew from the table and went on deck. He was in mid-ocean, *undique cœlum, undique pontus*. As the lightning cometh out of the East and shineth unto the West, so swift and far was the instrument to work that was taking shape in his creative mind.

The purpose instantly formed absorbed his mind, and to its perfection his life from that moment was devoted. He was the man to do the work. His mind was eminently inventive and mechanical. In his early youth and riper manhood, he had sought out many inventions. His name had long been enrolled among inventors in the Patent Office of the United States. Patience, perseverance, and faith were hereditary traits of his character. He was now forty-one years old.

Of all the great inventions that have made their authors immortal, and conferred enduring benefit upon mankind, no

tence, in which his earlier and later pencilings are preserved. As he sat upon the deck after the conversation at dinner, he drew from his pocket one of these books, and began to make marks to represent letters and figures to be produced by the agency of electricity at a distance from the place of action. First, he arranged ten dots and lines so as to represent figures referring to words. Next, he drew the wires in tubes. Then came the magnets, and by and by cog rules, to be used in regulating the power. In the course of a few days his book presented several pages of the first marks ever made in the invention of the Telegraph. [All of these drawings and marks are given in facsimile in the volume.]

He wrought incessantly that day, and sleep forsook him in his berth that night. His mind was on fire. In a few days he submitted these rough drafts to Mr. Rives, who suggested various difficulties. But Mr. Morse was ready with a solution. Mr. Fisher states that Mr. Morse illustrated to him his signs for letters, to be indicated by a quick succession of strokes or shocks of the galvanic current, to be carried along upon a single wire. After several sleepless nights, while his mind was in labor with the subject, he announced it at the breakfast table, and explained the process by which he



FACSIMILE OF THE ORIGINAL SKETCH, MADE BY MORSE, OF THE ELECTRIC TELEGRAPH—TAKEN FROM HIS NOTE BOOK.

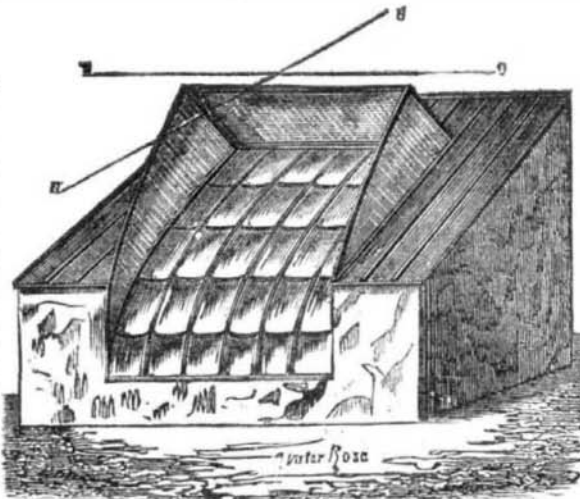
proposed to accomplish it. He then exhibited the drawing of the instrument, by which he would do the work, and so completely had he mastered all the details that five years afterward, when a model of this instrument was constructed, it was instantly recognized by Captain Pell and others, as the one he had devised and drawn in his sketch book, and exhibited to his fellow passengers on the ship.

Captain Pell says: "Before the vessel was in port, Mr. Morse addressed me in these words: 'Well, captain, should you hear of the telegraph, one of these days, as the wonder of the world, remember the discovery was made on board the good ship Sully.'"

Thus it appears from his own records, and the recollections of the captain and passengers, gentlemen of the highest respectability and intelligence, that on shipboard Mr. Morse had actually drawn out and recorded a system of signs, composed of a combination of dots and spaces, to indicate letters, figures, and words, and a mode of applying the electric or galvanic current so as to make these signs permanent upon paper, to be passed along in the instrument which he had invented. The invention was accomplished and announced ere the inventor set foot on his native shore.

FRENCH PHOTO SKYLIGHTS.

"In France they do not have as much sunshine as we; therefore," says Mr. Wilson, in the *Philadelphia Photographer*, "the construction of the skylight has had even more attention there than we give it. Every device is employed for securing a proper light, and a proper quantity of it, and for avoiding anything that may obstruct it. We all know how many skylights are obscured by an accumulation of dirt and dust and rain on the outside. I have known of several cases where photographers have complained that their lights continued to work slower and slower, when, had they looked upon the outside, the guilty cause would have been very apparent. But, in a measure, to avoid that labor, the French use the plan made plain by the figure annexed. It is not without several advantages.



FRENCH PHOTO SKYLIGHT.

"It is similar to the ordinary construction, differing, however, in form. The sash is curved. The advantage of this arrangement is alluded to above, and to do away with the beam which absorbs the freest and is most actinic part of the light, since it strikes the sitter at precisely an angle of 45°. The other part of the roof may be sloping both ways, the proportions of the atelier and the glass sash remaining as

ordinarily. At each end of the glass atelier a space may be set off of about ten feet in length on the whole width of the room, to be used as a laboratory and dressing room. The room will thus have a total length of eighteen meters, or about twenty-three feet.

For the portrait photographer who is sometimes obliged to accommodate the sitter who cannot come to his atelier, the



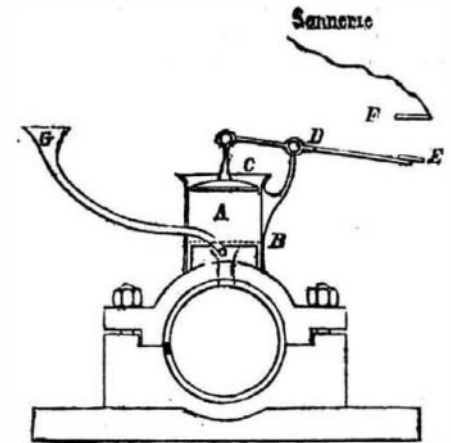
FRENCH PHOTO TENT.

annexed engraving of a tent, forming a posing room, will be found useful. The front faces the north in northern latitudes, and is turned, on the contrary, to the south in southern latitudes. Use a gray blue cloth background, which is about six feet wide by seven feet high. In travelling, it is rolled around the supporting pole; the top and the sides, forming curtains, are made of thin stuff, and held by rings to the rods of the framework, which are taken apart with great ease, to be packed into a very small compass.

In this portable atelier, excellent portraits may be obtained, and the time of posing is one half less than in a glass house. The professional photographer and the amateur will be henceforth able to work with advantage in the open air, and obtain very fine negatives of portraits and landscapes, with a baggage relatively light and easy of transportation.

A Hot Bearing Alarm.

This device, the diagram of which we extract from the



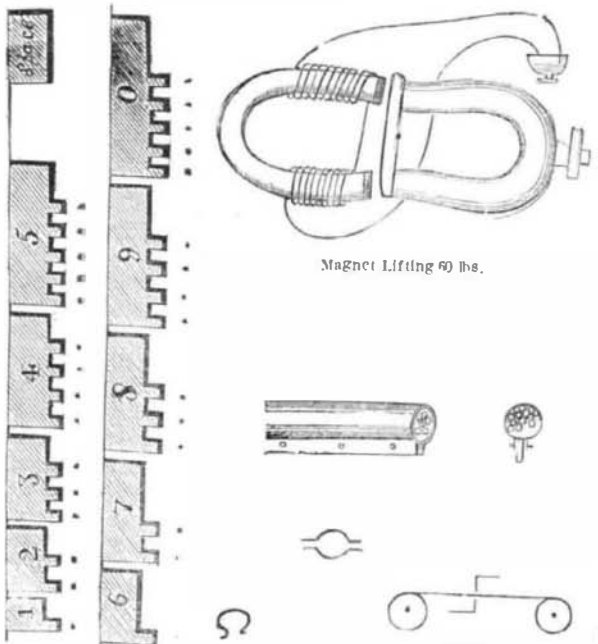
Revue Industrielle, consists in a cylindrical box, A, provided with a perforated bottom, B, and placed directly over the journal. The box is filled with a prepared grease which melts at a certain temperature, to which it must be raised by the shaft becoming hot. As the compound liquifies and escapes through the perforations, a disk, C, which rests thereon, descends, thereby tilting the lever, D, and so making contact between the plates, E and F. The latter are connected by an electric circuit with a bell which sounds when the current is established. The pipe, G, serves for the ordinary lubrication of the journal. It is suggested that this device might be profitably used upon journals not readily accessible.

The Shipping of the World.

The *Repertorio Generale della Marina* for 1874-75, recently published, gives some interesting statistics respecting the number of sailing ships belonging to the different nations in the world, with their tonnage. It may be remarked, however, that the following only relate to seagoing ships, vessels for inland navigation not being included:

Nationality.	No. of ships.	Tonnage.
British.....	20,538	5,383,763
American.....	6,869	2,181,659
Norwegian.....	4,464	1,349,138
Italian.....	4,343	1,227,816
French.....	3,780	736,326
German.....	3,483	852,789
Spanish.....	2,674	509,767
Greek.....	2,063	406,937
Swedish.....	1,905	360,368
Russian.....	1,428	330,350
Dutch.....	1,418	385,301
Danish.....	1,239	173,480
Austrian.....	955	327,742
Portuguese.....	410	92,808
Turkish.....	277	43,360
South American.....	219	82,761
Central American.....	138	46,580
Belgian.....	51	17,158
Asiatic.....	35	13,527
Total.....	56,289	14,523,680

The same publication gives the total tonnage of the steamships of all nations to be 5,244,888, of which 3,015,773 tons belong to England.



ORIGINAL SKETCHES FROM MORSE'S NOTE-BOOK.

one was so completely grasped at its inception as this. His little note or scratch book was always at hand, in which he made sketches of objects which met his eye, or of images formed in his mind. Scores of these books are now in exis-