

## Science and Art.

## Speed of Electricity.

Some early experiments on the velocity of electricity in high tension led to the assumption of an almost inconceivably high speed as that always natural to the electric fluid. The experiments lately made to test the feasibility

of the Atlantic Telegraph indicate about 1000 miles per second as the average velocity. It has also been proved that several waves of electricity may be travelling on the same wire at one time, a fact which will tend greatly to facilitate the rapid working of the great telegraph. In one case where the ends of 1020 miles of wire were brought near together, and a succession of shocks produced, three signals of a signal stroke bell were distinctly heard after the hand had ceased to transmit.

## The Pacific Railroad.

In reference to the construction of the Pacific Railroad several favorable circumstances have occurred. The new President (Mr. Buchanan) has recommended it in his Message, and found constitutional authority for it. The examinations for water, made under the direction of Captain Humphreys, of the Topographical Corps, have proved successful—water in abundance is found at various depths.—*Railroad Record.*

## Literary Notices.

**How to Write.**—A New Pocket Manual of Composition and Letter-Writing, intended for a class of young people and others, who are not satisfied with the puerile and trashy works so common under the general title of Letter-Writers, who do not desire to be saved from the necessity of study and thought, but who will be grateful for a little guidance in their studies, and for such instructions as will aid them to think for themselves, and to express their thoughts in fitting words. It is a good work, and should be possessed by all who are unused to writing letters. Price, in paper, 50 cts., muslin, 50 cts. Published by Fowler and Wells, 308 Broadway, N. Y.

**THE BAY PATH.**—A Tale of New England Colonial Life.—By J. G. Holland, author of the History of Western Massachusetts, etc. New York: G. P. Putnam & Co., Publishers. Dr. Holland has long been connected with the Springfield Republican as one of its editors, and occupies, as he well deserves to do, a conspicuous position among the able writers at present connected with the Massachusetts Press. The volume before us adds to his good reputation. It is written in an easy flowing style, evinces nice discrimination in descriptions of character and scenes, and, on the whole, forms a most agreeable book, suggested by the rugged story of New England Colonial Life. The work contains 418 pages. It will have an extensive sale among the descendants of the Pilgrim Fathers, who are widely scattered all over our country.

**VILLAS AND COTTAGES.**—A Series of Designs prepared for execution in the United States. By Calvert Vaux, architect.—Published by Harper & Brothers, New York. The author of this beautiful work, Mr. Vaux, was associated as partner with the late lamented Downing, whose name is familiar to the whole country as one of the most gifted and genial men of our time. Mr. Vaux has nobly brought forward in this volume many of the best architectural designs of Downing and others, and has made up a volume at once beautiful and highly valuable, not only to architects, but to all who desire to cultivate a refined taste for this branch of science. The book contains over 300 pages, and 300 engravings, illustrating dwellings costing from \$1,500 to \$50,000. The descriptions are practical, and the criticisms are judicious and very instructive. On the whole, it is an excellent work, and is published in the best style of the celebrated firm of Harper & Brothers. The price is only \$2.

**THE CRYSTAL SPHERE, ITS FORCES AND ITS BEINGS.**—Reflections on a Drop of Water. By J. Milton Ladders, M.D., L.L.D., H. Walliere, London and New York. Our first impressions on glancing at the title, that this extremely neat little volume was a poem or essay by some "spiritual medium," were most agreeably dispelled on further examination. It is a successful endeavor to popularize science and a knowledge of microscopic revelations, and is enthusiastic and startling in its descriptions of animalcular existence therein. The author is Professor of Chemistry in the Eclectic Medical Institute, Cincinnati, O.

**ENGINEERS AND MECHANICS COMPANION.**—Comprising United States Weights and Measures, Measurement of Surfaces and Solids, Tables, etc. Thirteenth edition; revised and enlarged. By J. M. Scribner, Mason Brothers, New York.

**ENGINEERS, CONTRACTORS, AND SURVEYORS POCKET TABLE BOOK.**—Comprising Logarithms of Numbers, Natural Sines and Tangents, Logarithmic ditto, the traverse table, a full set of excavation and embankment tables, etc. Seventh edition. By J. M. Scribner, A.M. Mason & Brothers, New York.



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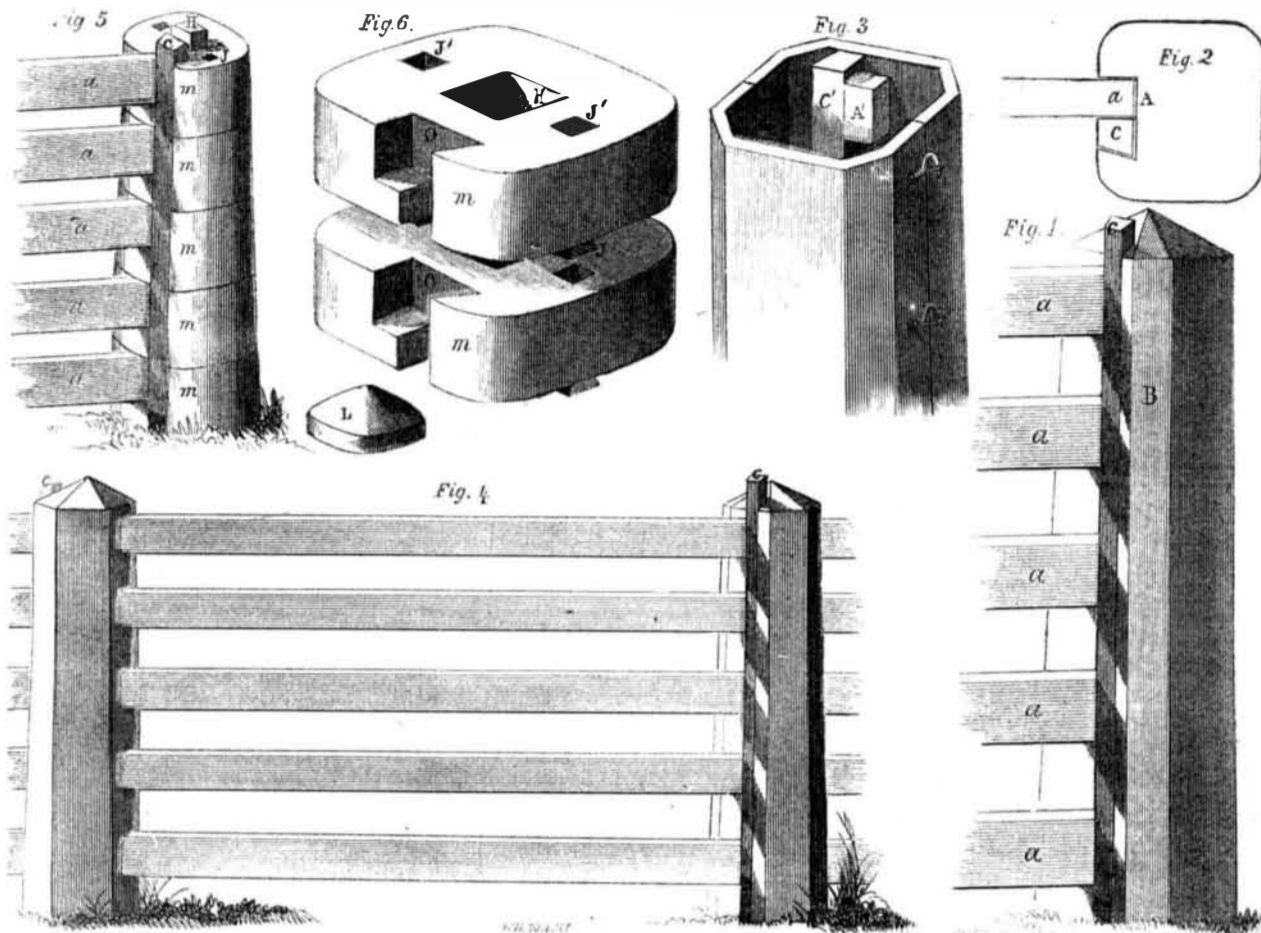
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## JOHNSON'S CONCRETE AND BRICK FENCE POSTS.



Mr. Frank G. Johnson, of Brooklyn, this State, patented on the 27th of January last, a method of constructing fence posts, of which the following, condensed principally from his specification, is a pretty full description:—The post may be built up solid on the spot it is to occupy, by filling the material into a suitable case, and allowing the case to remain until the post has become tolerably hard, or it may be built up of bricks previously baked in the ordinary manner; but in either case the invention employs material almost indestructible.

Fig. 1, a perspective view of a lime and gravel post, with the rails keyed in. Fig. 2, transverse section of the post; C, the key; a, a rail. Fig. 3, case or mold made in two parts, and held together by hooks. Fig. 4, perspective view of a length of fence. Fig. 5, perspective view of a brick post. Fig. 6, perspective view of two of the bricks separated from each other; L, the top or cap brick.

The object of this invention consists in providing for common use and field purposes, a cheap, simple and durable fence, composed of such materials as are generally available, and so constructed that any person may use it. It is now generally known that lime, gravel and cobble stones, properly mixed together in the form of mortar, and shoveled into suitable cases or molds and allowed to set or become somewhat hardened before the cases are removed, constitute a substantial and permanent wall; suitable even for building purposes, and which becomes harder and harder the longer it stands. The many dwelling-house and other buildings recently made, the walls of which are thus composed and constructed, demonstrate the practicability of employing these materials in a similar manner for the construction of posts in making fences.

The nature of the invention consists in composing the posts of fences of the materials, and in the manner above described, and in providing convenient and suitable means of inserting and keying the rails into posts thus made after they become hardened. The na-

ture of the invention further consists in attaching or fastening the rails to the posts in such a manner as to enable one to employ in the construction of posts, suitably formed brick and mortar as well as gravel and lime, and in constructing the brick in such shape that they will form the post by laying up a single tier of the brick one above another.

To enable any person to make and use his invention, he thus describes its construction:—

Provide suitable case or mold, fig. 3, made of boards or plank open at both ends, the base of which is set below the reach of frost, and into which is shoveled the mixture or mortar of gravel and lime. Upon two of the opposite sides of the interior of this case or mold are suitable projections, tenons or ribs, A', to form sockets (or mortises or grooves, A, fig. 2, into which (after the post, B, has become sufficiently hardened and the mold removed) the ends of the rails, a a a, are to be inserted.

Also place in suitable position within the mold a longitudinal strip or core, C', of such shape that it cannot be removed from the post after it (the post) has set, except it be drawn from the top of the post. The object of this core is to form or leave a passage down through the post, into which is inserted a strip of wood, C C C, figs. 1, 2 and 4, which is similar in form to the core, and which passes down from rail to rail, and forms one side of each mortise, for the purpose of forming a permanent key or lock to confine the rails in their proper position, after they are once placed in the post, which lock or key at any time may be drawn to remove the rails. It is not generally necessary to have the key or lock only at one extremity of the rails, the other end of the rails first being inserted into ordinary plain mortises. The exact form of the key or lock is not essential. It may be round, oval, angular, or provided it cannot be removed from the post except by drawing it out from the top.

In order to employ this method of attaching the rails to the posts, and at the same time to

construct the body of the post with clay or brick, first form or shape the brick, fig. 6, like the transverse section of the required post, the thickness of each one to be equal to the distance between the rails, fig. 5, and all the brick to have a common slot on one side to receive the pin or key, C, that holds the rails in place, and also an offset mortise or notch (O, fig. 6) from the key to receive the rails. These brick are to be laid up with a little common mortar between them. To give the post a greater lateral strength, provide on the lower side of each brick a pair of tenons, J J, which are dovetail shape or larger at the end; and on the upper side of each brick make a pair of mortises, J' J', which are larger at the bottom than at the top, and so large at the entrance as to receive the tenons. Now, by filling these mortises with mortar before the tenons enter, the mortar, by hardening, will firmly key or dovetail one brick to another. To prevent the brick from cracking while drying or seasoning, and as well to give the post still greater lateral strength, mold them with a square hole, (H', fig. 6) of considerable size through the center; and when the brick are laid up into a post, fill the interior of the post with mortar, or with a bar of wood (H, fig. 5) similar in size and shape to the cavity formed by the hole in the brick. To give the post any desired taper, give each brick its proper diameter and a common slope or taper.

By means of these methods of making posts they may be made of any desired shape—uniform and sawed stuff may be used for rails—it is impossible for any animal to displace the rails, and it obviates the necessity of renewing the post every few years.

Mr. J. does not claim the employment of the mixture of lime gravel and cobble stones in making posts, nor the mold or case in which to form the posts; but what he does claim is the post B, formed and constructed as described in combination with the keys, C, and rails, a, a, as described.

Further information can be had by address ing the inventor.